

# Avifauna of the southern Kerio Valley with emphasis on the area around the Kenya Fluorspar Mine site

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This paper began as a bird list kept for personal interest but, when comparing the range of species with that given by Lewis & Pomeroy (1989), it became apparent that many of the records were new or updated former ones, so a brief survey of the total area was conducted. This initial census revealed further species' range extensions along with some interesting breeding data and it was decided to concentrate on the area over an extended period—eventually becoming four years. It was written to serve two purposes: as a guide to the species one could expect to observe within the area but, more importantly, since all mines have a finite life and are to some extent responsible for the variety of avifauna present (or absent) within their immediate vicinity, to serve as a reference for future comparison.

Most of the records were made during the five years 1989–1993 and are personal; reference is also made to other contributors and acknowledged as such. Three hundred and thirty-eight species were recorded for the total area during the 48-month survey, of which 25 appeared true montane endemics being found only above 2000 m, 108 were pluriregional and 205 confined to the low and intermediate region. Avifauna observed in Region A (see Figs 1 and 12), between 1250 m and 2000 m, is described from p. 73 and also includes species overflying. Region B is described on p. 96 and includes species seen above 2000 m. Descriptions are given for the area in which individual species were recorded together with habitat preferences and notes on breeding where appropriate. One species, the Common Bulbul *Pycnonotus barbatus*, but with a broad white eye-ring, believed to inhabit only a single 1-km square within the area (Wilson 1994), is given an updated status on p. 111.

## Location

The study area contains the Kenya Fluorspar Company Limited (KFC) mine site ( $0^{\circ} 20' N$ ,  $35^{\circ} 40' E$ ), and is situated 325 km by road northwest of Nairobi in the southern end of the Kerio Valley. The locality is readily accessible, being gained through Nyaru on the edge of the Elgeyo Escarpment at 2750 m, whence an all-weather murram road, 24 km in length, winds its way through Turesia Market to the valley floor and the village of Kimwarer below (Fig 1).

## General description of the area

During the Post-Miocene era, tertiary lavas from local eruptions formed a protective cap of weather-resistant basalt and phonolites over the Precambrian rocks of the Mozambique system in the area. Subsequent faulting in a north–south direction resulted in the formation of the Kerio Valley and the 1500-m Elgeyo Escarpment, and later the Great Rift Valley. The entire geological succession, from Precambrian rocks to tertiary lavas, is exposed within the survey area. Later slumping of the escarpment

wall gave rise to an extremely fertile plateau at around 2000 m on which Turesia Market is now situated. This plateau is seen to act as a natural barrier between species regarded as montane and those of intermediate and lowland areas.

At its lowest level, the valley floor is characterized by *Acacia* savannah with scrubby grassland yielding to local riparian mixed woodland, often dense in places. At intermediate altitude, although mixed *Acacia* dominates the ecotone, ravine woodland becomes more evident. This intermediate region is essentially capped by the cultivated Turesia plateau where few mature trees remain but secondary tangled growth is common. The escarpment wall, which in places is almost vertical, suddenly terminates the *shamba* area and, adjacent to it, fragmented forest remnants cling to a precarious existence (see p. 112). At around 2600 m, bamboo becomes common as part of a mixed woodland and the summit of the escarpment is host to *Cupressus*. A more detailed description of the vegetation of the area is given at the beginning of the relevant sections.

### Climate

Figures of monthly rainfall and average temperature, measured at 1400 m, were provided by the KFC laboratory and are given in Figs 2 and 3 respectively. Seasonal temperature showed little variation on the valley floor resulting in a standard deviation of 1.25 on the maximum and 0.79 on the minimum during the period. Records from the beginning of 1989 and for the end of 1993 have been included for reference. Total annual precipitation is also given in parentheses.

Because of the effective amphitheatre of hills to the north, south and west, the area is subject to a micro climate. The prevailing wind during the early rains is generally westerly during the day with the warm air of the valley being replaced by cooler air descending from the high land at night. Afternoon storms during this period usually cross the valley floor and ascend the escarpment only to remain there as the cooler night air reverses the direction of flow. For this reason, the escarpment can be relatively cold and wet for extended periods. Cloud often cloaks the escarpment in the early mornings and late afternoons, occasionally not clearing at all during the rains. In the late rains the prevailing wind is often from the west, precipitation occurring prior to cloud crossing the valley floor. A steep precipitation gradient therefore exists across the survey site with 1200 mm of annual rainfall quoted for the extreme east and 1600 mm for the west (Fig 13). Humidity is generally high with evaporation rates at low altitude of between 1550 mm and 2200 mm annually (Cappon 1985), but as high as 200 mm per month has been recorded. A temperature gradient of around 5°C occurs between the valley floor and escarpment, although during the coldest months, freezing at the highest altitudes is not unknown.

The usually accepted rainfall periods for the year are March to June and June to October—Zone 2 of Griffiths (1958)—with an average 60 per cent of precipitation occurring in the latter period. During the survey the actual pattern did not conform to the accepted norm and, as can be seen from the mean rainfall figures (Fig 3), the rains comprise two seasons with 60 per cent of precipitation during the early period,

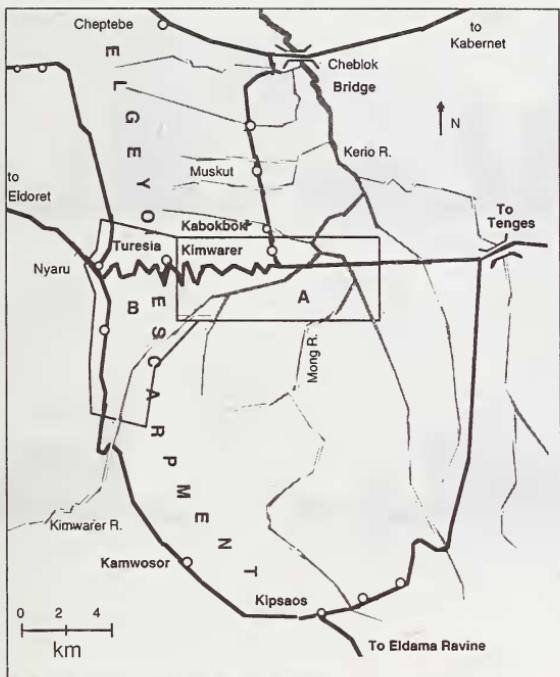


Figure 1. Location of survey area

generally diminishing during August. The late rains are short in comparison, only lasting through October and November annually. February is generally accepted as the driest month but, as Fig 3 shows, this only occurred during 1991.

Although the Kimwamer and Mong Rivers had been known to dry up (most recently in February–March 1988), both proved permanent throughout the survey period.

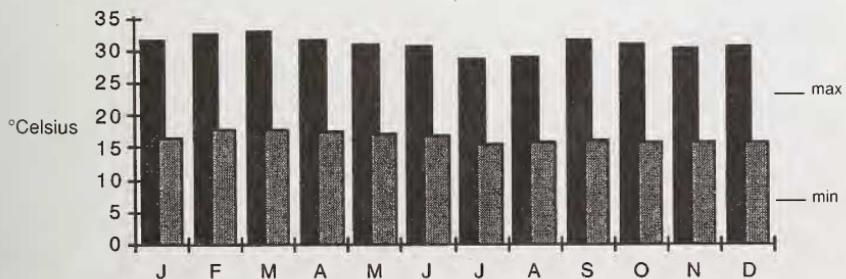


Figure 2. Mean temperature (°C) recorded at 1400 m, 1989–1993

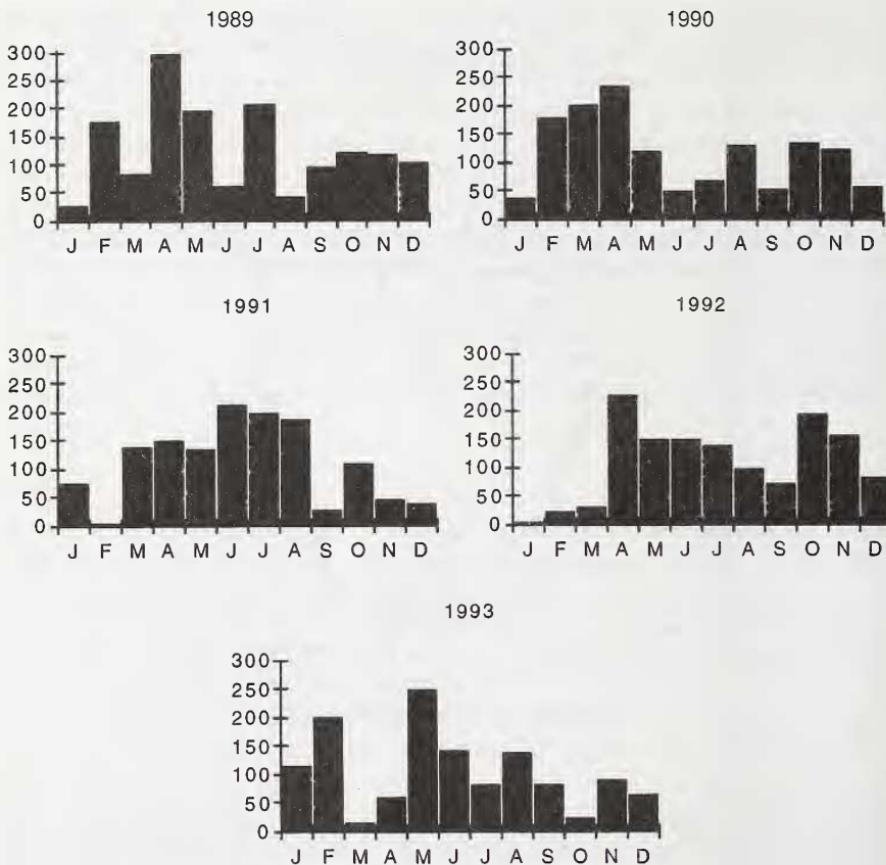


Figure 3. Annual rainfall totals (mm) 1989–1993

### Field Coverage

In excess of 3000 man-hours of observation were made throughout the 48-month survey period. Even so, with an area covering 60 km<sup>2</sup>, not all regions could be visited with the same frequency. To reduce bias, diverse habitat representing each altitude range was surveyed at regular monthly intervals. Observation was usually between 6:30 and 10:00 and between 17:30 and 18:30. Late evening visits were made to likely owl and nightjar areas. Avifauna presence was recorded both on sight and, where positive identification could be made, on voice too. Any species overflying the area were also noted and are stated as such under 'Species accounts'.

Some sample bias inevitably occurred and further observation of the denser



Figure 4. *Turesia* plateau with recent rock fall on the escarpment



Figure 5. *Turesia* plateau and escarpment



Figure 6. Escarpment from the staff housing area



Figure 7. View looking west from tailings lagoons with mine site on the right



Figure 8. Turesia plateau and escarpment

woodland remnants in steep valleys above 1500 m may add new species to those recorded. Bias is believed to be significant against skulking species—owls in particular, although some tape playback was used. While Pearl-spotted Owl *Glaucidium perlatum* and Verreaux's Eagle Owl *Bubo lacteus* used to be seen regularly below 1500 m in the early 1980s (M. Crawford, pers. comm.), the latter was observed by the writers only once in 1988 and twice in 1992; the lack of owl records above 2000 m is, however, thought to be real.



Figure 9. Severe erosion near Kabokbok



Figure 10. Severe erosion near Kabokbok



Figure 11. The Kinwarer River

## Region A: 1250 – 2000 m

### Description of survey area

The area of survey comprises the lease area of the KFC and immediate surrounding countryside, from the Turesia plateau at 2000 m to a grass airstrip 700 m below and 9 km to the east. Beyond the area of observation to the north and south, hills rise to 2400 m and, with the escarpment to the west, form an enclosing amphitheatre through which the Kimwarer River flows, joining the Mong River as tributaries to the Kerio River. To the east lies the floor of the Kerio Valley itself with the Ilkamasya Hills beyond. Avifauna is therefore influenced, not only by the mine site, but by both the dry valley floor and cooler, wetter adjacent highlands.

Since the observed site totals some 34 km<sup>2</sup>, the map (Fig. 12) is sectioned into kilometre squares to ease habitat description.

### Sector description

A, B 1 and 2, being above 2000 m, and are not included in Region A of the survey.

A, B 3, 4, C 1, 2, 3, D 5 and 6 are all above 1500 m and are of similar habitat comprising steep hillsides covered by *Acacia* woodland—commonly *Acacia abyssinica*—interspersed with mature *Euphorbia candelabrum* and occasional *Terminalia brownii*. In some locations this habitat type is subjected to seasonal burning and planting; however, overgrazing is not apparent. Cliffs and rock outcrops, where present, are host to various succulents, especially *Aloe*. Seasonal water courses hold mixed, often dense ravine woodland with vegetation as described for D 2–4.

D 1, at the upper limit of observation, contains a small murram quarry which, although devoid of vegetation on its floor, hosts a variety of flowering plants on its dry slopes, commonly *Rumex usambarensis*. *Dodonaea angustifolia* and *Teclea* associated with *Hibiscus cannabinus* surround the quarry. *Erythrina abyssinica* is common here.

D 2, 3 and 4, adjacent to the rivers, hold small remnants of ravine woodland which include mature trees from the following non-exhaustive genus list: *Acacia* (commonly *A. tortilis* and *A. eliator*), *Bauhinia*, *Cassia*, *Combretum*, *Tamarindus*, *Teclea*, *Terminalia*, *Vangueria* and *Ziziphus*. *Ficus sycamorus* is common, both in the ravine woodland and along the Kimwarer River.

A and B 5 contain the mine workings and, since in operation, afford areas of barren rock interspersed with patches of perennial grass and low *Acacia* bush bordered by mixed *Acacia* woodland to the west.

C 4 and 5 contain the staff housing which, on the northern side, is bounded by dense *Dodonaea angustifolia* and *Teclea* in a small ravine. The well tended gardens have been planted with exotic species such as *Plumeria rubra* and *Nerium oleander*, the latter often being parasitized by *Loranthus*. While the larger indigenous trees, e.g., *Pappea capensis*, *Acacia hockii*, *Combretum molle* and *Terminalia brownii* have been retained, introduced species include *Cupressus lusitanica*, *Tipuana tipu* and *Cassia spectabilis*. Fruit trees commonly planted within the area include guava *Psidium*,

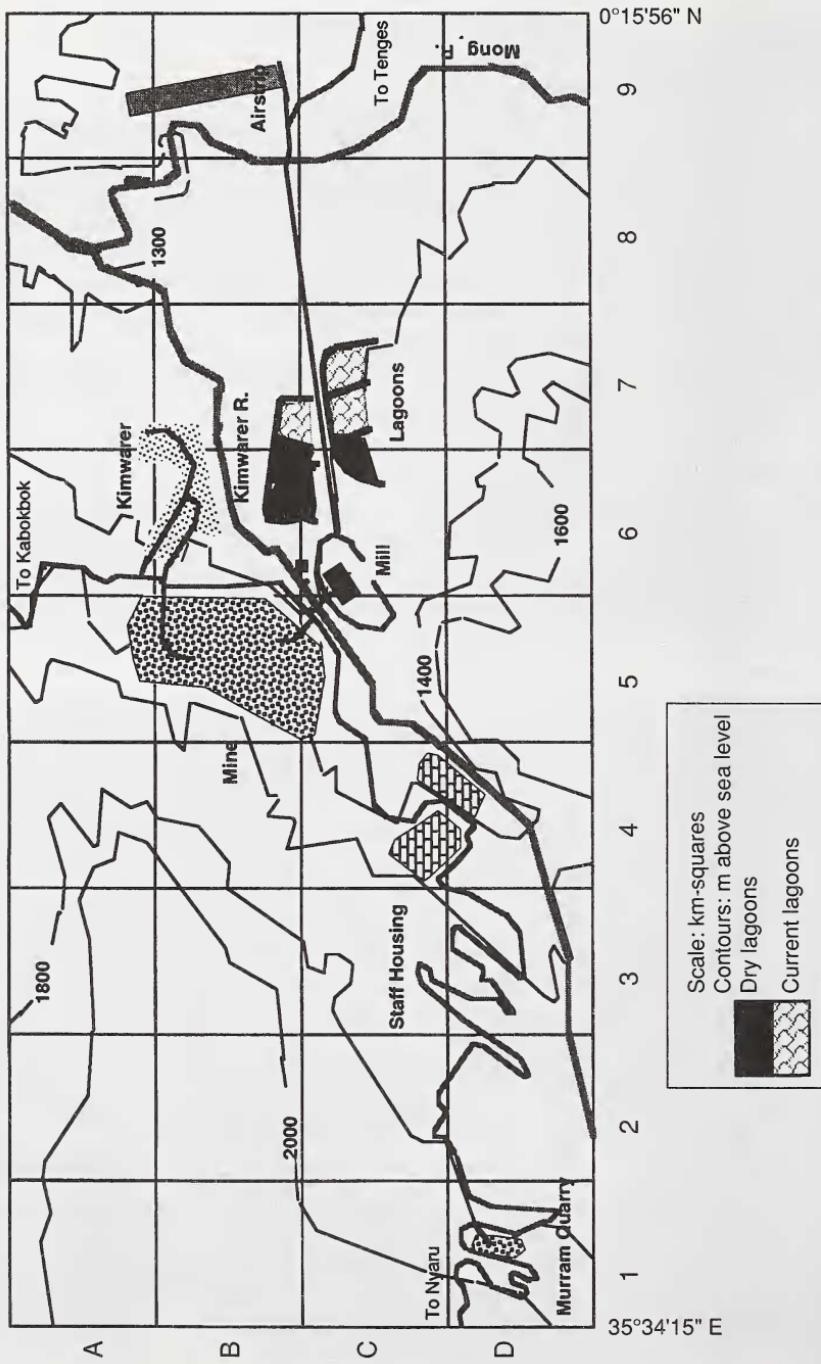


Figure 12. Map of survey area A

pawpaw *Carica papaya*, mango *Mangifera indica* and various *Citrus* species. Decorative plants, brought down from higher areas of the valley by the mine staff, provide further varied habitat and food sources.

A, B 6 and 7 contain the junior staff housing and Kimwarer village with surrounding *shambas* on which crops, including maize *Zea mays*, are grown. Mature *Acacia* dominates the woodland of the area with specimens of *A. polyacantha* and *A. albida* being common. Overgrazing is apparent outside the *shamba* area and erosion is evident too. The area also holds one of the largest expanses of mature *Ficus sycamorus*.

C 6 and 7 contain the most diverse habitat and include the large buildings of the processing plant. Fenced tailings lagoons, with relatively large areas of permanent water often with *Typha* and *Cyperus* in association, are surrounded by young *Acacia* and *Cassia didymobotryza* and perennial grasses. An area of mature *Acacia* (*A. seyal*,

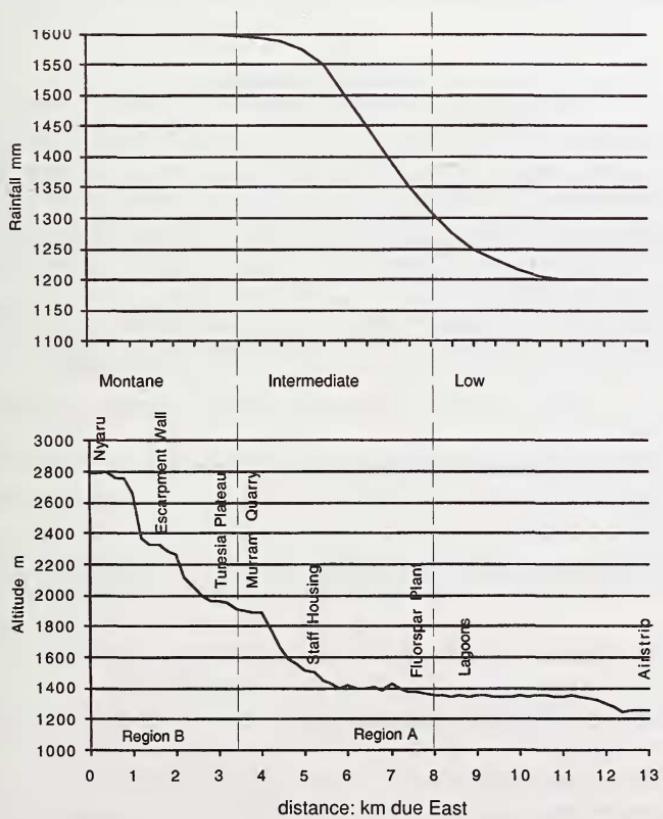


Figure 13. Section through the area and annual rainfall gradient

*A. hockii*, *A. tortilis* and *A. gerrardii*), with dense tangled undergrowth, covers one dried lagoon and a small tree nursery with an adjacent pond, partly overgrown by very dense *Cyperus*, completes the sector.

A and B 8 are areas of mixed woodland similar to C 8 but including numerous *Terminalia brownii* with an extensive understorey of *Croton dichogamus*.

C 8, D 7 and 8 are relatively flat lowland, characterized by mixed open woodland of *Acacia nilotica*, *A. seyal*, *Balanites aegyptiaca* and *Acokanthera schimperi*. Secondary growth is commonly *Ipomea* and extensive, dense *Croton dichogamus*.

A, B, C and D 9 are essentially flat with *Acacia drepanolobium* bush punctuated with mature trees as in C 8. Large areas of bush have been cleared, providing land for a grass airstrip, school playing fields and, in the majority, *shambas* on which grain crops, including maize, finger millet *Eleusine coracana* and sorghum *Sorghum bicolor* are grown. Other cash crops of the area include banana *Musa* spp, cassava *Manihot utilissima* and groundnuts *Arachis hypogaea*. Live fencing is practised with *Acacia senegala*, *Euphorbia triticollia* and sisal *Agave* often being used.

### Species accounts

The following annotated list contains all species recorded below 2000 m throughout the survey period. Figures in parentheses refer to sectors on the map (Fig 12) and indicate the area most commonly or, in the case of rare sightings, the only area associated with an individual species. Where a location is not given, the species was either to be found throughout the area or other comments, for example 'overflying' are made. (For the monthly occurrence of visitors see p. 91.)

Species order follows Britton (1980). The first number is Britton's, the second is Lewis & Pomeroy's (1989); the subject area is in their square 49D.

#### PODICIPIDAE

**Little Grebe** *Tachybaptus ruficollis* 4, 2: (C 6) singles 20 Oct 1990, 20 Feb 1993, 1 May 1993.

#### PELECANIDAE

**Pink-backed Pelican** *Pelecanus rufescens* 12, 17: (C 6) 1 overflying 21 Jul 1991.

#### ARDEIDAE

**Grey Heron** *Ardea cinerea* 25, 40: (B 7 and 9) infrequent visitor.

**Goliath Heron** *Ardea goliath*, 26, 42; (B 7) single 6 Sep 1989.

**Black-headed Heron** *Ardea melanocephala*, 27, 43: (C 6) infrequent visitor: 4, 22 Dec 1991 and 5, 10 Jul 1993.

**Squacco Heron** *Ardea ralloides* 30, 31: (C 6) single 17 Sep 1989.

**Cattle Egret** *Bubulcus ibis* 32, 30: (C 7) 4, 19 Oct 1991, single 22 Dec 1991.

**Green-backed Heron** *Butorides striatus* 33, 34: (C 6) breeding resident.

**Little Egret** *Egretta garzetta* 36, 35: (C 6) 10, 27 Aug 1989, 15, 21 Oct 1990.

**Yellow-billed Egret** *Egretta intermedia* 38, 38: (C 6) single 12 Dec 1990.

SCOPIDAE

**Hamerkop** *Scopus umbretta* 42, 44: common probable breeding resident. Nests found along the Kimwarer River.

CICONIIDAE

**Open-billed Stork** *Anastomus lamelligerus* 43, 51: c. 200 flying east 24 Nov 1990.

**Woolly-necked Stork** *Ciconia episcopus* 46, 48: occasional visitor between January and the end of May each year: (B 7) three 2 May 1993. Latest presence 30 May 1993 [RHB].

**Black Stork** *Ciconia nigra* 47, 46: (C 6) 2, 12 Dec 1990.

**Marabou** *Leptoptilos crumeniferus* 49, 50: (C 6) singles 10 and 17 Nov 1990.

**Yellow-billed Stork** *Mycteria ibis* 50, 52: (A 8 and C 7) resident.

THRESKIORNITHIDAE

**Hadada** *Bostrychia hagedash* 51, 54: common (believed breeding) resident along rivers and in ravine woodland.

ANATIDAE

**Egyptian Goose** *Alopochen aegyptiacus* 61, 64: breeding resident.

ACCIPITRIDAE

**Pallid Harrier** *Circus macrourus* 1993, 95: southward bound migrant generally late September to end October annually. Single male 22 Jul 1993.

**Montagu's Harrier** *Circus pygarus* 94, 96: southward bound migrant; single females 3 to 10 Nov 1991 and 8 Nov 1992.

**Harrier Hawk** *Polyboroides radiatus* 96, 94: regular, almost daily visitor.

**Brown Snake Eagle** *Circaetus cinereus* 98, 101: singles 31 Aug in both 1991 and 1992, 8 Nov 1992 and 10 Jul 1993.

**Short-toed Snake Eagle** *Circaetus gallicus* 100, 100: (C 4) single 27 Jan 1991 and pair 22 Jul 1993.

**Bateleur** *Terathopius ecaudatus* 101, 99: male overflying 17 Nov 1990.

**Shikra** *Accipiter badius* 102, 110: (C 6) singles 1 May 1992 [RHB] and 21 Jun 1992.

**Great Sparrowhawk** *Accipiter melanoleucus* 106, 104: occasional visitor.

**Little Sparrowhawk** *Accipiter minullus* 107, 109: resident.

**African Goshawk** *Accipiter tachiro* 111, 108: resident.

**Tawny Eagle** *Aquila rapax* 116, 129: occasional visitor.

**Wahlberg's Eagle** *Aquila wahlbergi* 118, 133: regular visitor, absent annually March to June.

**Augur Buzzard** *Buteo augur* 120, 119: regular visitor breeding at higher altitude.

**Common Buzzard** *Buteo buteo* 122, 117: regular passage migrant, south during October, north Jan to April.

**Booted Eagle** *Hieraetus pennatus* 127, 124: once in association with Common Buzzard 31 Jan 1993.

**African Hawk Eagle** *Hieraetus spilogaster* 128, 125: pair and immature 8 Feb 1992.

Adults 24 Jun and 24 Feb, pair 23 May [RHB] and an immature 30 Jul 1993.

**Long-crested Eagle** *Lophaetus occipitalis* 130, 121: resident. (Extralimital breeding at 15 km northeast.)

**Gabar Goshawk** *Melierax gabar* 131, 114: occasional visitor.

**Dark Chanting Goshawk** *Melierax metabates* 132, 112: (B 8, 9 and C 6) regular visitor, mainly late rains.

**Pale Chanting Goshawk** *Melierax poliopterus* 133, 113: (B 9, C 4–6) rare visitor 6 Sep and 1 Nov 1989, 15 Feb and 8 Dec 1990 and 10 Feb 1991.

**Crowned Eagle** *Stephanoaetus coronatus* 135, 122: over-flying, singles 26 Jan and 24 Mar 1991, pair 22 Sep 1991 and single 19 Jul 1993.

**Black Kite** *Milvus migrans* 138, 135: (B 6) scarce resident, six 9 Dec 1990.

**Cuckoo Hawk** *Aviceda cuculoides* 139, 136: (C 4) adult 8 Nov 1992.

**Black-shouldered Kite** *Elanus caeruleus* 142, 139: breeding resident.

#### FALCONIDAE

**Lanner Falcon** *Falco biarmicus* 148, 146: (C 6) single 28 Sep 1991.

**Kestrel** *Falco tinnunculus* 161, 159: (C 4) rare visitor 17 Apr 1991, 13 Mar 1993 [RHB] and 26 Jun 1993.

**Pygmy Falcon** *Polihierax semitorquatus* 163, 142: (C 4) singles 25 Feb and 8 Jun 1990.

#### PHASIANIDAE

**Crested Francolin** *Francolinus sephaena* 182, 167: common breeding resident.

**Scaly Francolin** *Francolinus squamatus* 184, 161: (C 5) pair 23 Aug 1991.

#### NUMIDIDAE

**Crested Guineafowl** *Guttera edouardi* 188, 179: (C 3) Five 9 Feb, four 3 Mar and single 13 Oct 1990. (A 4) Single 22 Jul 1993.

**Helmeted Guineafowl** *Numida meleagris* 190, 180: breeding resident below 1400 m.

#### GRUIDAE

**Crowned Crane** *Balearica pavonina* 194, 184: occasional visitor.

#### RALLIDAE

**Black Crake** *Limnocorax flavirostra* 201, 193: breeding resident.

**Red-knobbed Coot** *Fulica cristata* 215, 197: (C 7) singles 16 Dec 1990 and 21 Feb 1993.

#### CHARADRIIDAE

**Three-banded Plover** *Charadrius tricollaris* 239, 235: occasional visitor.

#### SCOLOPACIDAE

**Common Sandpiper** *Actitis hypoleucos* 252, 265: some present all year; migrants swell numbers, south September, north April.

**Wood Sandpiper** *Tringa glareola* 256, 263: (C 6) single 8 Nov 1992.

**Greenshank** *Tringa nebularia* 257, 261: (C 7) singles 11 Aug 1991 and 31 Oct 1992.  
**Green Sandpiper** *Tringa ochropus* 258, 262: passage migrant, south October and north April. An individual which remained from early December 1990 to the end January 1991 may have been over-wintering.

**Little Stint** *Calidris minuta* 272, 239: (C 6) three, 9–11 Aug 1991.

#### RECURVIROSTRIDAE

**Black-winged Stilt** *Himantopus himantopus* 282, 267: (C 7) singles 21 Sep 1991, 31 Oct 1992 and 26 Jan 1993.

#### LARIDAE

**Black-headed Gull** *Larus ridibundus* 314, 295: (C 6-7) single 12 Dec 1990.

#### PTEROCLIDAE

**Lichtenstein's Sandgrouse** *Pterocles lichtensteinii* 335, 320: (A 9) 23 Jan and 31 Mar 1993. (D 3). On road in ravine woodland 3 Apr 1993. Always in pairs [All records RHB].

#### COLUMBIDAE

**Olive Pigeon** *Columba arquatrix* 339, 352: (C 4) single 23 Jan 1992.

**Speckled Pigeon** *Columba guinea* 341, 324: (C 6) common breeding resident. (See p. 107.)

**Feral Pigeon** *Columba livia* 342, 323: (C 6) single July to October 1991 in association with Speckled Pigeon.

**Namaqua Dove** *Oena capensis* 345, 339: (B 9) influx at end of late rains leaving again early in dry season.

**Ring-necked Dove** *Streptopelia capicola* 346, 328: breeding resident below 1600 m.

**Dusky Turtle Dove** *Streptopelia lugens* 348, 332: occasional visitor throughout October and November 1990, January and September 1992.

**Laughing Dove** *Streptopelia senegalensi* 351, 333: very common breeding resident.

**Blue-spotted Wood Dove** *Turtur afer* 355, 336: (C 6) breeding resident at 1350 m.

**Emerald-spotted Wood Dove** *Turtur chalcosceles* 356, 337: common breeding resident usually above 1400 m.

**Tambourine Dove** *Turtur tympanistria* 357, 335: Breeding resident 1500–2000 m.

**Green Pigeon** *Treron australis* 358, 340: (B 6-7 and C 4) probable breeding resident.

#### PSITTACIDAE

**Brown Parrot** *Poicephalus meyeri* 367, 344: common breeding resident.

#### MUSOPHAGIDAE

**White-bellied Go-away Bird** *Corythaixoides leucogaster* 374, 354: breeding resident below 1400 m.

**Ross's Turaco** *Musophaga rossae* 377, 361: breeding resident above 1500 m (see 'Habitat preferences of similar species', p. 106).

**White-crested Turaco** *Tauraco leucolophus* 381, 359: breeding resident below 1550 m (see p. 106).

## CUCULIDAE

**Didric Cuckoo** *Chrysococcyx caprius* 388, 374: regular visitor most common during early rains.

**Emerald Cuckoo** *Chrysococcyx cupreus* 389, 372: believed to be breeding resident.

**Klaas' Cuckoo** *Chrysococcyx klaas* 391, 373: believed to be breeding resident.

**Black and White Cuckoo** *Clamator jacobinus* 393, 363: uncommon (migrant?) visitor to the area. Five (black morph) 30 Oct 1989, 2 (black and white) 29 Jul 1992 and singles (black and white) 21 Feb and 13 Mar 1993.

**Levaillant's Cuckoo** *Clamator levaillantii* 394, 364: (C 4) probable migrant; singles 30 Jun 1990, 30 Sep 1991, 19 Jul 1992 and 30 Jan 1993.

**Black Cuckoo** *Cuculus clamosus* 396, 366: breeding resident. Recorded towards the end of the early rains, May to July 1990, 1991 and 1992 and from March to July 1993 (see 'Breeding', p. 107).

**African Cuckoo** *Cuculus gularis* 397, 367: (C 8) first recorded 11 Jun 1992 (juv). Adult recorded 28 Feb 1993 (see p. 107).

**Red-chested Cuckoo** *Cuculus solitarius* 399, 365: regular breeding visitor, arriving during the dry season with most birds departing at the end of the early rains.

**White-browed Coucal** *Centropus superciliosus* 406, 377: uncommon breeding resident.

## STRIGIDAE

**Verreaux's Eagle Owl** *Bubo lacteus* 414, 387: (C 4) single adults 3 Sep and 30 Oct 1992.

**Scops Owl** *Otus scops* 424, 382: (C 4) observed asleep in dense cover. Often seen illuminated by vehicle headlights. Believed resident.

## CAPRIMULGIDAE

**Slender-tailed Nightjar** *Caprimulgus clarus* 427, 406: adult birds common below 1500 m. Often seen hunting around mine building lights.

**Plain Nightjar** *Caprimulgus inornatus* 433, 402: (B 6) one observed both in flight and on the ground during daylight hours 20 Oct 1990.

**Montane Nightjar** *Caprimulgus poliocephalus* 437, 398: (C 4) although more common at higher altitude, occasionally heard and seen hunting around estate lights at 1500 m.

## APODIDAE

**Mottled Swift** *Apus aequatorialis* 442, 416: regular visitor from higher altitude.

**Little Swift** *Apus affinis* 443, 424: very common breeding resident nesting on buildings throughout the area. Numbers decline during the dry season annually.

**Eurasian Swift** *Apus apus* 444, 418: small numbers recorded during January and December of each year.

**Black Swift** *Apus barbatus* 445, 419: although relatively common at higher altitude, this species was seldom seen within this region of the study area. One record worthy of note is of c. 30 birds present at the lagoons (C 7) 1 May 1993.

**White-rumped Swift** *Apus caffer* 447, 422: rare until 1991 when it became a breeding resident. (See 'Species interaction', p. 105.)

**Nyanza Swift** *Apus niansae* 450, 421: pairs overflying 7 Dec 1990 and 1 Jun 1991 after storms.

**Scarce Swift** *Schoutedenapus myoptilus* 453, 414: four seen in association with White-rumped and Little Swifts, forced low by cloud before a storm 12 Apr 1992.

#### COLIIDAE

**Speckled Mousebird** *Colius striatus* 459, 425: common breeding resident.

**Blue-naped Mousebird** *Urocolius macrourus* 461, 427: Small flocks visit irregularly, most often in the dry season and below 1600 m.

#### TROGONIDAE

**Narina's Trogon** *Apaloderma narina* 462, 428: probable breeding resident above 1500 m.

#### ALCEDINIDAE

**Giant Kingfisher** *Ceryle maxima* 464, 430: one pair resident.

**Pied Kingfisher** *Ceryle rudis* 465, 431: irregular visitor.

**Chestnut-bellied Kingfisher** *Halcyon leucocephala* 473, 436: regular visitor especially during the dry season and early rains.

**Woodland Kingfisher** *Halcyon senegalensis* 475, 439: rare visitor below 1500 m.

**Pygmy Kingfisher** *Ispidina picta* 478, 435: probable breeding resident.

#### MEROPIDAE

**White-throated Bee-eater** *Merops albicollis* 479, 450: flocks of up to c. 60 often overflying the area. Least common October to December annually.

**Eurasian Bee-eater** *Merops apiaster* 480, 448: most common mid-October to end November and February. A few recorded December and January each year.

**White-fronted Bee-eater** *Merops bullockoides* 482, 441: common breeding resident of eastern lowland to 1400 m.

**Cinnamon-chested Bee-eater** *Merops oreobates* 488, 444: regular visitor from higher altitude.

**Little Bee-eater** *Merops pusillus* 491, 442: (B and C 6-7) uncommon breeding resident below 1350 m.

#### CORACIIDAE

**Lilac-breasted Roller** *Coracias caudata* 496, 455: irregular visitor to the northeast of the area.

**Eurasian Roller** *Coracias garrulus* 497, 454: (B 8) single 31 Oct 1992

**Rufous-crowned Roller** *Coracias naevia* 498, 456: singles observed to 1500 m: 11 Feb 1990, throughout December 1991, 6 Apr and 31 Oct 1992 and 21 Feb 1993.

**Broad-billed Roller** *Eurystomus glaucurus* 500, 457: (C 4) irregular migrant, two 16 Sep and 13 Oct 1990. Singles 8 Jul, 19 Sep and 12 Oct 1991.

## UPUPIDAE

**Hoopoe** *Upupa epops* 502, 458: resident in open woodland below 1600 m (see p. 111)

## PHOENICULIDAE

**Scimitarbill** *Phoeniculus cyanomelas* 505, 462: resident below 1550 m.

**Abyssinian Scimitarbill** *Phoeniculus minor* 507, 463: occasionally recorded in open woodland below 1400 m.

**Green Wood Hoopoe** *Phoeniculus purpureus* 508, 459: breeding resident.

## BUCEROTIDAE

**Black and White Casqued Hornbill** *Bycanistes subcylindricus* 513, 464: visitor, most often between September of one year and March of the next.

**Crowned Hornbill** *Tockus alboterminatus* 515, 474: probable breeding resident observed above 1400 m.

**Red-billed Hornbill** *Tockus erythrorhynchus* 518, 472: (B 8) recorded at 1350 m, 9 Sep 1989, 11 Feb 1990, 21 Jan 1992 and 2 May 1993; always in pairs.

**Yellow-billed Hornbill** *Tockus flavirostris* 520, 469: (B 7-8) recorded in similar habitat to previous species 17 Sep 1989 and 14 Apr 1990.

**Hemprich's Hornbill** *Tockus hemprichii* 522, 473: uncommon and erratic visitor.

**Jackson's Hornbill** *Tockus jacksoni* 523, 471: the most common hornbill of the area—a breeding resident below 1550 m.

**Grey Hornbill** *Tockus nasutus* 524, 475: uncommon visitor to lowland *Acacia* mainly during the dry season.

**Ground Hornbill** *Bucorvus cafer* 528, 467: (D 9) pair 11 Feb 1990.

## CAPITONIDAE

**Yellow-spotted Barbet** *Buccanodon duchaillui* 529, 487: singles (C 3) 13 Sep 1989 and (B 9) 21 Oct 1990.

**Double-toothed Barbet** *Lybius bidentatus* 534, 477: probable breeding resident.

**Red-fronted Barbet** *Lybius diadematus* 535, 482: (B 9) uncommon visitor but close extra-limital breeding resident observed within the area: 5 and 26 Oct, 9 Nov and 22 Dec 1991. Also 19 Apr 1992 and 23 Jan 1993.

**Spotted-flanked Barbet** *Lybius lacrymosus* 539, 484: relatively common breeding resident.

**Yellow-rumped Tinkerbird** *Pogoniulus bilineatus* 548, 495: relatively common, probable breeding resident of ravine woodland edge.

**Moustached Green Tinkerbird** *Pogoniulus leucomystax* 551, 492: visitor from higher altitude during the rains.

**Red-fronted Tinkerbird** *Pogoniulus pusillus* 552, 493: common breeding resident.

**d'Arnaud's Barbet** *Trachyphonus darnaudii* 557, 497: common breeding resident below 1400 m.

**Red and Yellow Barbet** *Trachyphonus erythrocephalus* 558, 499: uncommon breeding resident below 1400 m.

## INDICATORIDAE

**Black-throated Honeyguide** *Indicator indicator* 563, 500: breeding resident.

**Lesser Honeyguide** *Indicator minor* 566, 501: believed resident.

**Scaly-throated Honeyguide** *Indicator variegatus* 569, 503: uncommon visitor

## PICIDAE

**Red-throated Wryneck** *Jynx ruficollis* 575, 510: breeding resident at higher altitude.

One seen (A 9) 21 Jun 1992.

**Nubian Woodpecker** *Campetherina nubica* 583, 512: breeding resident.

**Cardinal Woodpecker** *Dendropicos fuscescens* 585, 519: breeding resident almost always encountered in pairs.

**Grey Woodpecker** *Mesopicos goertae* 590, 522: uncommon resident below 1550 m.

**Bearded Woodpecker** *Thripias namaquus* 594, 520: rare (or under-recorded) resident.

## ALAUDIDAE

**Fawn Coloured Lark** *Mirafra africanaoides* 613, 526: (C 6) single observed on a dry, former lagoon 17 Dec 1990.

## HIRUNDINIDAE

**House Martin** *Delichon urbica* 623, 563: small numbers from October to early March annually then many hundreds congregate for two to three days (C 4) mid-March each year leaving a few stragglers into early April.

**Striped Swallow** *Hirundo abyssinica* 624, 559: breeding resident present between December and September with numbers decreasing during August and September annually, apparently totally absent October and November. (See 'Species interaction', p. 105.)

**Angola Swallow** *Hirundo angolensis* 627, 555: (C 6) single with Wire-tailed Swallows 5 Oct, two on 26 Oct 1991 and 5 Mar 1993.

**Red-rumped Swallow** *Hirundo daurica* 630, 556: breeding resident at higher altitude.

**African Rock Martin** *Hirundo fuligula* 632, 560: (C 4) uncommon breeding resident. (See 'Species interaction', p. 105.)

**Barn Swallow** *Hirundo rustica* 634, 553: small numbers recorded between September of one year and January of the next.

**Mosque Swallow** *Hirundo senegalensis* 636, 557: (C 5) single 2 Dec 1990.

**Wire-tailed Swallow** *Hirundo smithii* 637, 552: breeding resident using man-made structures for nest sites. Least common during the dry season.

**Black Rough-wing** *Psalidoprocne pristoptera* 640, 564: a daily visitor from the higher altitude Elgeyo escarpment.

**African Sand Martin** *Riparia paludicola* 642, 549: recorded as small flocks 24 Nov 1990 and 11 Mar 1991.

**Sand Martin** *Riparia riparia* 643, 550: occasionally recorded between October and March annually.

## DICRURIDAE

**Drongo** *Dicrurus adsimilis* 644, 566: common breeding resident.

## ORIOLIDAE

**African Golden Oriole** *Oriolus auratus* 646, 572: singles 28 Oct 1989, 9 Oct 1990 and 22 May 1993 [RHB].

**Black-headed Oriole** *Oriolus larvatus* 649, 568: common breeding resident.

**Golden Oriole** *Oriolus oriolus* 651, 573: singles 3 Oct 1989, 1 Dec 1990 and 31 Oct 1992.

## CORVIDAE

**Fan-tailed Raven** *Corvus rhipidurus* 656, 579: unrecorded prior to May 1991 then a regular visitor.

## PARIDAE

**Grey Tit** *Parus afer* 660, 581: (B 5) single 9 Jan 1991.

**White-bellied Tit** *Parus albiventris* 661, 583: breeding resident.

## REMIZIDAE

**African Penduline Tit** *Remiz caroli* 668, 586: (B 6) uncommon breeding resident (see p. 111).

**Mouse-coloured Penduline Tit** *Remiz musculus* 669, 587: (B 7) single 8 Dec 1990 (see p. 111).

## TIMALIIDAE

**Arrow-marked Babbler** *Turdoides jardineii* 681, 601: common breeding resident above 1400 m (see p. 106).

**Brown Babbler** *Turdoides plebejus* 684, 602: breeding resident, rarely observed above 1400 m (see p. 106).

**Rufous Chatterer** *Turdoides rubiginosus* 685, 595: common breeding resident.

## CAMPEPHAGIDAE

**Black Cuckoo Shrike** *Campephaga flava* 688, 604: uncommon breeding resident.

## PYCNONOTIDAE

**Yellow-whiskered Greenbul** *Andropadus latirostris* 710, 618: common breeding resident of ravine woodland above 1500 m.

**Northern Brownbul** *Phyllastrephus strepitans* 729, 628: uncommon breeding resident.

**Common Bulbul** *Pycnonotus barbatus* 732, 609: common breeding resident. Some birds with distinctive white eye-ring (see p. 111).

## TURDIDAE

**Spotted Morning Thrush** *Cichladusa guttata* 748, 661: common breeding resident below 1500 m.

**Robin Chat** *Cossypha caffra* 749, 670: occasional visitor during the rains (see p. 107).

**White-browed Robin Chat** *Cossypha heuglini* 751, 666: common breeding resident (see p. 107).

**Red-capped Robin Chat** *Cossypha natalensis* 752, 669: probable breeding resident. Highest altitude record at 1650 m [FW] (see p. 111).

**Sprosser Luscinia** *luscinia* 763, 644: (B 6) single 6 Apr 1992.

**Little Rock Thrush** *Monticola rufocinerea* 768, 652: only recorded above 1600 m throughout November 1991, February and October 1992 and January and April 1993.

**Rock Thrush** *Monticola saxatilis* 769, 651: (B 5 and C 6) singles annually between October and May.

**Isabelline Wheatear** *Oenanthe isabellina* 775, 638: (B 9) singles throughout October 1990.

**Mourning Wheatear** *Oenanthe lugens* 776, 643: (B 9) singles during November and December 1990 and October 1991.

**Northern Wheatear** *Oenanthe oenanthe* 777, 639: a few on passage between October and January annually.

**Redstart** *Phoenicurus phoenicurus* 781, 647: (C 4) single throughout January 1990. Pair observed daily between January and Mar 1991.

**Whinchat** *Saxicola rubetra* 783, 635: (B 9) single 26 Oct 1991.

**Cliffchat** *Thamnolaea cinnamomeiventris* 792, 655: (C 4) single male singing 15–17 Feb 1993.

**Northern Olive Thrush** *Turdus abyssinicus* 793, 678: spasmodically recorded during the rains (see p. 107).

**African Thrush** *Turdus pelios* 801, 676: common breeding resident below 1550 m (see p. 107).

#### SYLVIIDAE

**Lesser Swamp Warbler** *Acrocephalus gracilirostris* 807, 696: (C 6) under-recorded but believed resident. First seen November 1991.

**Sedge Warbler** *Acrocephalus schoenobaenus* 811, 690: (C 6) single 27 Jan 1991.

**Grey Apalis** *Apalis cinerea* 817, 754: regular visitor from higher altitude.

**Yellow-breasted Apalis** *Apalis flava* 818, 750: uncommon breeding resident below 1400 m.

**Grey-backed Camaroptera** *Camaroptera brachyura* 837, 760: common breeding resident.

**Rattling Cisticola** *Cisticola chiniana* 854, 727: common breeding resident.

**Winding Cisticola** *Cisticola galactotes* 860, 740: less common than the preceding species but believed resident along the Kimwarer River.

**Yellow-bellied Eremomela** *Eremomela icteropygialis* 878, 764: (C 6) singles 14 Apr 1990 and 19 May 1991.

**Olivaceous Warbler** *Hippolais pallida* 888, 698: (C 6) singles 25 Nov 1990, 8 Feb 1991 and throughout November 1991.

**Buff-bellied Warbler** *Phyllolais pulchella* 902, 749: common breeding resident mainly below 1400 m.

**Willow Warbler** *Phylloscopus trochilus* 908, 715: recorded on passage September to May. Very common on southward migration during October annually.

**Tawny-flanked Prinia** *Prinia subflava* 913, 743: uncommon probable breeding resident.

**Red-fronted Warbler** *Spiloptila rufifrons* 916, 747: (B 8) singles throughout February and October 1991.

**Blackcap** *Sylvia atricapilla* 917, 708: common on passage October to April but mainly February and March annually.

**Garden Warbler** *Sylvia borin* 918, 707: (C 4) singles 25 Nov 1990, 24 Feb and 14 Mar 1991.

**Barred Warbler** *Sylvia nisoria* 920, 705: (C 4) one with Blackcaps 29 Nov 1992.

**Northern Crombec** *Sylvietta brachyura* 921, 772: uncommon breeding resident of the drier east below 1350 m.

**Red-faced Crombec** *Sylvietta whytii* 925, 771: common breeding resident.

#### MUSCICAPIDAE

**Grey Flycatcher** *Bradornis microrhynchus* 927, 793: breeding resident of the drier east. Most common below 1400 m (see p. 107).

**Pale Flycatcher** *Bradornis pallidus* 928, 792: common breeding resident above 1500 m (see p. 107).

**Silverbird** *Empidornis semipartitus* 929, 791: uncommon breeding resident of the extreme east below 1350 m.

**Collared Flycatcher** *Ficedula albicollis semitorquata* 930, 786: (C 4) single male remained for two days in gardens 1500 m, 6–7 Mar 1992 [A photograph is with the EANHS.]

**White-eyed Slaty Flycatcher** *Melaenornis chocolatina* 933, 790: (D 1) non-breeding resident.

**Black Flycatcher** *Melaenornis edolioides* 934, 789: (C 5) although observed in the same habitat, apparently rare in comparison to Southern Black Flycatcher. Singles 9 and 20 Oct 1990 and 4 May 1993.

**Southern Black Flycatcher** *Melaenornis pammelaina* 935, 788: fairly regular visitor during the rains.

**Dusky Flycatcher** *Muscicapa adusta* 936, 782: very common breeding resident of ravine woodland above 1400 m.

**Ashy Flycatcher** *Muscicapa caerulescens* 938, 785: (A 9) singles 29 Sep 1991 and 28 Sep 1992 [RHB].

**Gambaga Flycatcher** *Muscicapa gambagae* 941, 781: (A 9) singles 1 Nov 1992, (C 4) 7 and 25 Mar and 14 Jun 1993. Known to be an extralimital breeding species at 1200 m. (Richards 1992).

**Spotted Flycatcher** *Muscicapa striata* 945, 780: recorded annually during October, when common.

**Lead-coloured Flycatcher** *Myioparus plumbeus* 946, 787: locally common breeding resident below 1500 m (see p. 110).

**Chinspot Batis** *Batis molitor* 951, 794: common breeding resident.

**Black-throated Wattle-eye** *Platysteira peltata* 961, 803: (C 3) uncommon breeding resident of ravine woodland above 1600 m.

**Paradise Flycatcher** *Terpsiphone viridis* 968, 812: common, probable breeding resident. The white-phase male most often recorded.

#### MOTACILLIDAE

**Richard's Pipit** *Anthus novaeseelandiae* 981, 814: (B 9) single 17 Sep 1989.

**Tree Pipit** *Anthus trivialis* 984, 817: occasional birds between October and March but no December records.

**African Pied Wagtail** *Motacilla aguimp* 991, 831: common breeding resident.

**Mountain Wagtail** *Motacilla clara* 995, 833: resident along the Kimwarer River.

**Yellow Wagtail** *Motacilla flava* 996, 830: (B 7-9) recorded September–October and March annually. Largest flock 20, 26 Oct 1991.

#### MALACONOTIDAE

**Northern Puffback** *Dryoscopus gambensis* 1000, 837: uncommon breeding resident (see p. 111).

**Black-headed Gonolek** *Laniarius barbarus* 1003, 845: common breeding resident below 1500 m.

**Tropical Boubou** *Laniarius ferrugineus* 1004, 849: uncommon breeding resident.

**Slate-coloured Boubou** *Laniarius funebris* 1006, 850: common breeding resident below 1400 m.

**Grey-headed Bush Shrike** *Malaconotus blanchoti* 1012, 854: uncommon breeding resident.

**Sulphur-breasted Bush Shrike** *Malaconotus sulfureopectus* 1019, 852: common breeding resident.

**Brubru** *Nilaus afer* 1020, 835: rare breeding resident below 1400 m.

**Brown-headed Tchagra** *Tchagra australis* 1022, 840: uncommon, probable breeding resident above 1450 m.

**Black-headed Tchagra** *Tchagra senegala* 1025, 842: occasionally encountered below 1450 m.

#### LANIIDAE

**Fiscal** *Lanius collaris* 1029, 864: uncommon breeding resident.

**Red-backed Shrike** *Lanius collurio* 1030, 857: (C 6-7) singles 21 Oct and 25 Nov 1990 and 31 Oct 1992.

**Grey-backed Fiscal** *Lanius excubitorius* 1032, 861: uncommon breeding resident. Rarely recorded above 1350 m.

**Red-tailed Shrike** *Lanius isabellinus* 1034, 858: (B 9) single adult male 31 Oct 1992.

**Lesser Grey Shrike** *Lanius minor* 1036, 863: (B 9) singles 29 Sep and (C 4) 19 Oct 1991 (see p. 112).

**Nubian Shrike** *Lanius nubicus* 1037, 859: (B 9) an adult 31 Oct 1992 (see p. 112).

## PRIONOPIDAE

**White-crowned Shrike** *Eurocephalus rueppelli* 1041, 874: uncommon breeding resident.

**Helmet Shrike** *Prionops plumata cristata* 1043, 870: regular visitor to mixed woodland, most common during the early rains.

## STURNIDAE

**Violet-backed Starling** *Cinnyricinclus leucogaster* 1048, 896: breeding resident.

**Wattled Starling** *Creatophora cinerea* 1052, 899: (B 9) small party 17 Nov 1990.

**Bronze-tailed Glossy Starling** *Lamprotornis chalcurus* 1054, 878: (C 4) visitor between 13–28 Jan 1990 (see p. 112).

**Blue-eared Glossy Starling** *Lamprotornis chalybaeus* 1055, 879: common, apparently non-breeding resident.

**Rüppell's Long-tailed Glossy Starling** *Lamprotornis purpuropterus* 1060, 881: relatively common breeding resident.

**Red-winged Starling** *Onychognathus morio* 1064, 885: visitor from higher altitude, numbers increasing dramatically May to July annually when flocks of 50 or more observed above 1800 m.

**Bristle-crowned Starling** *Onychognathus salvadorii* 1065, 884: (C 4) small parties 1 Nov 1990, 25 Oct 1991 and 27 Jan 1993.

**Slender-billed Chestnut-winged Starling** *Onychognathus tenuirostris* 1066, 886: (C 4) two 22 Jul 1993.

**Superb Starling** *Spreo superbus* 1076, 890: common breeding resident below 1400 m (see p. 112).

**Red-billed Oxpecker** *Buphagus erythrorhynchus* 1078, 901: (B 9) small flocks between September and October 1991.

## NECTARINIIDAE

**Collared Sunbird** *Anthreptes collaris* 1080, 902: common breeding resident above 1400 m.

**Eastern Violet-backed Sunbird** *Anthreptes orientalis* 1084, 906: (B 7 and C 9) resident below 1350 m.

**Pygmy Sunbird** *Anthreptes platurus* 1086, 903: (C 3) pair 21 Oct 1990.

**Amethyst Sunbird** *Nectarinia amethystina* 1091, 932: common breeding resident.

**Hunter's Sunbird** *Nectarinia hunteri* 1101, 931: probable breeding resident of the drier east below 1400 m.

**Bronze Sunbird** *Nectarinia kilimensis* 1103, 925: irregular visitor from higher altitude during the rains.

**Mariqua Sunbird** *Nectarinia mariquensis* 1107, 916: (C 7) resident below 1350 m.

**Eastern Double-collared Sunbird** *Nectarinia mediocris* 1108, 922: (C 4) single at 1500 m, 8 Mar 1992.

**Olive Sunbird** *Nectarinia olivacea* 1112, 929: Uncommon breeding resident.

**Northern Double-collared Sunbird** *Nectarinia preussi* 1115, 921: common breeding resident of higher altitude recorded once at 1500 m (C 4) 5 Aug 1992.

**Beautiful Sunbird** *Nectarinia pulchella* 1116, 920: common breeding resident.

**Scarlet-chested Sunbird** *Nectarinia senegalensis* 1122, 930: common breeding resident of the west above 1500 m.

**Variable Sunbird** *Nectarinia venusta* 1128, 910: probable breeding resident.

**Green-headed Sunbird** *Nectarinia verticalis* 1130, 934: common visitor from higher altitude during the rains.

#### ZOSTEROPIDAE

**Yellow White-eye** *Zosterops senegalensis* 1133, 937: common breeding resident.

#### PLOCEIDAE

**Grosbeak Weaver** *Amblyospiza albifrons* 1134, 970: (B 6 and C 6) breeding resident (see p. 110).

**Red-headed Weaver** *Anaplectes rubriceps* 1135, 969: uncommon breeding resident.

**Yellow Bishop** *Euplectes capensis* 1141, 978: (D 1) breeding resident below Turesia at 1950 m.

**Baglafecht Weaver** *Ploceus baglafecht* 1159, 960: regular visitor, breeding at higher altitude.

**Black-headed Weaver** *Ploceus cucullatus* 1165, 940: common breeding resident. Large numbers present during the rains.

**Golden-backed Weaver** *Ploceus jacksoni* 1171, 950: uncommon breeding resident at 1350 m.

**Little Weaver** *Ploceus luteolus* 1172, 957: rare breeding resident.

**Spectacled Weaver** *Ploceus ocularis* 1177, 962: rare, probable breeding resident.

**Chestnut Weaver** *Ploceus rubiginosus* 1180, 956: (B 9) breeding resident 1989–1992.

**Vitelline Masked Weaver** *Ploceus velatus* 1187, 954: (A 9) single 21 Jun 1992.

**Cardinal Quelea** *Quelea cardinalis* 1191, 988: (B 8-9) flocks present June to August from 1991.

**Red-billed Quelea** *Quelea quelea* 1193, 986: only common during 1991 (see p. 113).

**White-billed Buffalo Weaver** *Bubalornis albirostris* 1194, 1002: (C 4) rare visitor recorded January to March and June 1991.

**White-headed Buffalo Weaver** *Dinemellia dinemelli* 1196, 1004: relatively common breeding resident below 1350 m.

**White-browed Sparrow Weaver** *Plocepasser mahali* 1199, 997: the most common breeding weaver of the area.

**Chestnut-crowned Sparrow Weaver** *Plocepasser superciliosus* 1200, 999: locally common breeding resident below 1550 m.

**Grey-headed Social Weaver** *Pseudonigrita arnaudi* 1201, 1000: (A and B 9 and C 7) common breeding resident.

**Chestnut Sparrow** *Passer eminibey* 1205, 994: (A 9) breeding resident with numbers increasing June and July annually.

**Grey-headed Sparrow** *Passer griseus* 1206, 990: breeding resident (see p. 106).

**Rufous Sparrow** *Passer motitensis* 1207, 991: (A 9) uncommon visitor from the Turesia plateau.

**Yellow-spotted Petronia** *Petronia pyrgita* 1208, 995: singles 21 Jun and 1 Nov 1990 at 1300 m (A 9) and 21 Feb 1993 at 1500 m (A 4). Common extralimital species below 1250 m.

**Speckle-fronted Weaver** *Sporopipes frontalis* 1210, 996: (A 9) singles 29 Sep and 5 Oct 1991.

**Red-billed Firefinch Indigobird** *Hypochera chalybeata* 1211, 1019: uncommon, probable breeding resident (see p. 112).

**Steel-blue Whydah** *Vidua hypocherina* 1215, 1033: (B 9) two females and a male 22 Dec 1991.

**Pin-tailed Whydah** *Vidua macroura* 1216, 1032: common breeding resident below 1500 m.

**Paradise Whydah** *Vidua paradisaea* 1218, 1010: (B 9) small flocks August and September annually.

#### ESTRILIDAE

**Waxbill Estrilda astrild** 1226, 1029: small numbers during May, June and September 1991 and July 1992.

**Black-cheeked Waxbill** *Estrilda erythronotus* 1228, 1035: (A 9) singles 21 Jun 1992 and 21 Feb 1993.

**Yellow-bellied Waxbill** *Estrilda melanotis* 1229, 1038: recorded April 1991 and 1992.

**Black-crowned Waxbill** *Estrilda nonnula* 1230, 1036: (C 4) three 20 Apr and two 31 Jul 1993.

**Crimson-rumped Waxbill** *Estrilda rhodopyga* 1233, 1031: (C 4) three 4 Apr 1993 [FW].

**African Firefinch** *Lagonosticta rubricata* 1239, 1022: uncommon breeding resident.

**Red-billed Firefinch** *Lagonosticta senegala* 1241, 1018: common breeding resident.

**Green-winged Pytilia** *Pytilia melba* 1256, 1008: (B 9) singles 29 Sep and 22 Dec 1991.

**Red-cheeked Cordon-bleu** *Uraeginthus bengalus* 1261, 1024: very common breeding resident.

**Blue-capped Cordon-bleu** *Uraeginthus cyanocephalus* 1262, 1025: (C 4) pair observed throughout February and March 1991.

**Cut-throat Amadina** *fasciata* 1264, 1046: (B 9) small flocks late July to December annually.

**Black and White Mannikin** *Lonchura bicolor* 1265, 1042: (C 4) single with Bronze Mannikins 27 Jan 1990.

**Bronze Mannikin** *Lonchura cucullata* 1266, 1041: common breeding resident.

**Grey-headed Silver-bill** *Lonchura griseicapilla* 1268, 1045: breeding resident at 1350 m.

## FRINGILLIDAE

**Golden-breasted Bunting** *Emberiza flaviventris* 1273, 1050: uncommon breeding resident.

**Cinnamon-breasted Rock Bunting** *Emberiza tahapisi* 1278, 1047: recorded during September 1989, January 1990 and January, September and October 1991.

**Yellow-rumped Seed-eater** *Serinus atrogularis* 1280, 1058: common breeding resident.

**African Citril** *Serinus citrinelloides* 1283, 1054: visitor from higher altitude during early rains.

**White-bellied Canary** *Serinus dorsostriatus* 1285, 1057: irregular visitor during the late rains 1990 and 1991.

**Streaky Seed-eater** *Serinus striolatus* 1292, 1064: recorded twice prior to 1992 then common (see p. 113).

**Brimstone Canary** *Serinus sulphuratus* 1293, 1059: (C 3) singles 17 Sep 1989 and 11 Feb 1990.

## List of species' occurrence

The following list includes only those species not considered permanent residents. It excludes rare sightings consisting of less than six individual monthly records, species resident at higher altitude but which visit regularly, especially during the rains, and Palaearctic migrants. Brief details of these are given in 'Species accounts'.

If, during a particular month, visiting suitable habitat would always result in a sighting, the species is placed in category A. If observed during 60 per cent of visits, species receive category B, etc.

- A Always encountered.
- B Often encountered, recorded on more than 60 per cent of visits
- C Uncommon, but recorded on more than 30 per cent of visits
- D Scarce, but recorded on more than 10 per cent of visits
- E Rare, recorded on less than 10 per cent of visits
- Not recorded

Species	J	F	M	A	M	J	J	A	S	O	N	D
<b>Black-headed Heron</b>												
1989								-	E	-	-	-
1990	-	E	-	-	-	-	-	-	-	E	-	E
1991	-	-	-	-	-	-	-	-	E	E	-	D
1993	-	E	-	-	E	E	D					
<b>Great Sparrowhawk</b>												
1989								-	-	-	-	-
1990	-	E	-	E	-	E	-	-	-	-	-	E
1991	-	E	E	-	-	-	E	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	E	-	E	-	-	-					
<b>Tawny Eagle</b>												
1989								-	-	-	-	-
1990	-	E	E	-	-	-	E	-	-	E	-	E
1991	-	-	E	-	-	-	E	E	E	E	-	E
1992	-	E	E	-	-	E	E	E	E	E	E	-
1993	E	-	-	-	-	-	-					
<b>Wahlberg's Eagle</b>												
1989								-	-	-	-	D
1990	-	-	-	-	-	-	-	D	-	D	-	-
1991	-	-	-	-	-	-	-	E	E	E	E	E
1992	D	D	-	-	-	-	E	E	E	E	E	E
1993	D	D	-	-	-	-	-					
<b>Gabar Goshawk</b>												
1989								-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	E
1991	-	-	-	-	-	-	-	-	-	-	-	E
1992	-	-	E	E	-	-	-	-	-	-	-	-
1993	-	E	-	E	-	-	E					
<b>Dark Chanting Goshawk</b>												
1989								-	C	C	C	C
1990	-	C	C	-	-	-	-	-	-	C	C	-
1991	-	-	-	-	-	-	-	C	C	C	C	B
1992	-	-	-	C	-	-	C	-	-	C	C	-
1993	-	-	-	-	C	-	-					
<b>Black-shouldered Kite</b>												
1989								-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	E	C	C	C	C	C
1992	-	-	-	-	-	-	C	D	D	C	C	C
1993	-	-	E	-	-	-	C					

Species	J	F	M	A	M	J	J	A	S	O	N	D
<b>Crowned Crane</b>												
1989									-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	D	D	D	-	-
1992	-	-	-	-	-	-	-	D	D	D	D	-
1993	-	-	-	-	E	-	E					
<b>Three-banded Plover</b>												
1989									-	-	-	B
1990	-	-	-	-	-	-	-	-	-	-	-	B
1991	A	-	-	-	-	A	-	A	A	-	B	B
1992	-	-	-	B	-	B	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-	
<b>Namaqua Dove</b>												
1989								B	A	A	A	A
1990	-	E	-	-	-	-	-	-	-	A	A	A
1991	-	-	-	-	-	-	-	B	A	A	A	A
1992	-	-	-	-	-	E	-	-	-	A	A	A
1993	-	-	-	-	-	-	-	-	-	-	-	
<b>Didric Cuckoo</b>												
1989									-	-	E	-
1990	-	-	-	-	-	A	-	-	-	-	E	-
1991	E	-	-	-	A	A	-	-	-	-	D	E
1992	-	-	A	A	-	A	-	-	-	-	-	-
1993	-	B	A	A	A	A	B					
<b>Emerald Cuckoo</b>												
1989								-	B	-	-	-
1990	-	-	-	-	-	-	-	-	B	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	E
1992	-	-	A	A	B	A	-	-	-	-	-	-
1993	-	A	A	A	A	A	A					
<b>Red-chested Cuckoo</b>												
1989									-	-	-	E
1990	B	A	A	A	A	A	A	-	-	-	-	E
1991	B	A	A	A	A	A	A	-	E	-	-	-
1992	-	-	B	A	A	A	A	-	-	-	-	-
1993	B	A	A	A	A	A	A					
<b>Blue-naped Mousebird</b>												
1989									-	-	-	B
1990	C	C	-	-	-	-	-	-	-	C	C	-
1991	-	-	C	-	C	-	-	B	B	B	A	A
1992	-	-	-	C	-	-	C	-	-	A	A	-
1993	B	B	B	B	-	C	C					
<b>Pied Kingfisher</b>												
1989									-	E	E	-
1990	-	-	-	-	-	-	-	E	-	-	-	E
1991	-	-	-	-	-	-	-	E	E	E	-	E
1992	-	-	-	-	-	-	-	-	-	E	E	-
1993	E	-	-	-	D	-	-					



Species	J	F	M	A	M	J	J	A	S	O	N	D
<b>Striped Swallow</b>												
1989								C	D	-	-	D
1990	A	A	A	A	A	A	A	C	-	-	-	D
1991	A	A	A	A	A	A	A	C	E	-	-	A
1992	A	A	A	A	A	A	A	E	-	-	-	A
1993	A	A	A	A	A	A	B					
<b>Fan-tailed Raven</b>												
1989								-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	E	-	-	D	D	D	D	D	D	D	D
1992	D	D	D	D	D	D	D	D	D	D	D	D
1993	D	-	D	-	D	D	D					
<b>Southern Black Flycatcher</b>												
1989								E	E	-	-	-
1990	-	-	E	E	E	E	-	-	-	-	-	-
1991	-	-	-	-	E	-	-	E	E	E	E	E
1992	-	-	-	E	E	-	E	-	-	-	-	-
1993	-	-	E	E	E	-	-					
<b>Helmet Shrike</b>												
1989								-	D	D	D	D
1990	D	D	D	-	-	-	D	D	C	C	C	C
1991	D	D	D	C	C	C	C	B	B	D	D	D
1992	D	D	D	C	C	C	C	B	D	D	D	D
1993	D	D	B	A	A	A	A					
<b>Cardinal Quelea</b>												
1989								-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	B	B	B	E	-	-	-
1992	-	-	-	-	-	B	B	B	E	-	-	-
1993	-	-	-	-	-	B	B					
<b>Red-billed Quelea</b>												
1989								-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	E	D	D	D	D	-	-	D	D	D	D	D
1992	E	-	-	D	-	-	-	D	D	D	D	D
1993	E	-	-	-	-	D	-					
Species	J	F	M	A	M	J	J	A	S	O	N	D
<b>White-bellied Canary</b>												
1989								-	-	-	-	-
1990	-	-	-	-	-	-	-	-	E	E	E	E
1991	-	-	-	-	-	-	-	E	E	E	-	E
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-					

## Region B: 2000 m – 2750 m

### Description of survey area

The sloping Turesia plateau, which occupies the 2000 m to 2300 m altitude range, has essentially been clear-felled for cultivation and only a few typical *Tabernaemontana*, *Albiza* and *Apodytes* forest-type trees remain. Agriculture on the plateau consists of root crops and extensive seasonal sorghum *Sorghum bicolor* and finger millet *Eleusine coracana*. *Acacia mearnsii* and Cupressaceae have been introduced and, with *Acacia abyssinica* and *Eucalyptus*, are now probably the most numerous trees of the area. Further evidence of the former montane forestation is provided by the remnant floristic composition of fragmented woodlands and hedgerows: *Hibiscus ludwigi*, *Senecio* and *Rubus*, for example, being typically abundant and, with Convolvulaceae, forming dense mats of vegetation. Flora of upland forest edges—*Crotalaria* (commonly *agatiflora*)—is to be found throughout extensive *Verninia auriculifera*–*Plectranthus barbatus* thickets.

Above the plateau, luxuriant forest-edge flora begins with emergent *Euphorbia obovalifolia* and *Dombeya* (commonly *burgessiae*) draped with lianas, *Cyphostemma* and *Cyathula* forming curtains of leaves. Flacourtiaceae, *Dracaena steudneri*, *Podocarpus*, *Olea* and an occasional *Juniperus* stand proof to the higher rainfall of the area. Visceceae and Loranthaceae parasitize throughout. *Impatiens sodenii* and *I. tinctoria* are typical along water courses and *Plectranthus laxiflorus*, which prefers moist ground, is common.

The escarpment wall, almost sheer in places, creates a sudden transition from the dense tangle of montane forest-type vegetation to steep upper slopes dominated by *Dombeya burgessiae* which, at 2500 m, have grown to mature trees. This area holds relatively extensive low vegetation, including bracken *Pteridium aquilinum* and *Hebenstretia* among the trees.

At around 2600 m a patchwork of bamboo and Cupressaceae occurs, quickly giving way to the escarpment summit and extensive *Cupressus lusitanica*. Many of the trees on the upper escarpment and summit are clothed in Ascolichens.

### Species accounts

The following annotated list contains species observed between 2000 m and 2750 m. Those species marked with an asterisk (\*) are considered montane endemics, being only encountered above 2000 m. Apart from the Woolly-necked Stork, Black and White Casqued Hornbill, Sharpe's Starling *Cinnyricinclus sharpii*, Crimson-rumped Waxbill, Yellow-fronted Canary and Palaearctic migrants, all species are thought to be resident. All species recorded overflying are accounted for in 'Species accounts'.

#### CICONIIDAE

**Woolly-necked Stork** *Ciconia episcopus* 46, 48: singles preening, standing in a small pool at 2700 m 15 Jan 1991 and 4 May 1992.

## ACCIPITRIDAE

**Harrier Hawk** *Polyboroides radiatus* 96, 94: breeding resident often seen foraging along water courses.

**African Goshawk** *Accipiter tachiro* 111, 108: breeding resident.

**Augur Buzzard** *Buteo augur* 120, 119: breeding resident.

## COLUMBIDAE

**Speckled Pigeon** *Columba guinea* 314, 324: common breeding resident along the crags of the escarpment.

**Red-eyed Dove** *Streptopelia semitorquata* 350, 330: breeding resident.

**Emerald-spotted Wood Dove** *Turtur chalcospilos* 356, 337: extremely common breeding resident. Observed to 2300 m.

## PSITTACIDAE

**Brown Parrot** *Poicephalus meyeri* 367, 344: regularly observed to 2450 m in large trees of forest remnant.

## MUSOPHAGIDAE

**Hartlaub's Turaco** *Tauraco hartlaubi*\* 379, 358: breeding resident (see p. 106).

## CUCULIDAE

**Didric Cuckoo** *Chrysococcyx caprius* 388, 374: occasionally seen on the Turesia plateau at 2100 m.

**Klaas' Cuckoo** *Chrysococcyx klaas* 391, 373: apparently resident, descending to lower altitude during the rains.

**Red-chested Cuckoo** *Cuculus solitarius* 399, 365: a regular visitor during early rains from March or April.

## CAPRIMULGIDAE

**Montane Nightjar** *Caprimulgus poliocephalus* 473, 398: the most common nightjar of the area, easily located by its distinctive call. Seen on the escarpment road at dawn and dusk.

## APODIDAE

**Mottled Swift** *Apus aequatorialis* 442, 416: observed around the escarpment; regularly descending to low altitude to feed.

**Black Swift** *Apus barbatus* 445, 419: a relatively common swift believed to be a breeding resident.

## COLIIDAE

**Speckled Mousebird** *Colius striatus* 459, 425: common below 2600 m.

## TROGONIDAE

**Narina's Trogan** *Apaloderma narina* 462, 428: fairly common, probable breeding resident.

## MEROPIDAE

**Cinnamon-chested Bee-eater** *Merops oreobates* 448, 444: breeding resident often visiting lower altitudes.

## PHOENICULIDAE

**White-headed Wood Hoopoe** *Phoeniculus bollei*\* 503, 461: observed in forest remnant along the escarpment above 2350 m.

**Scimitarbill** *Phoeniculus cyanomelas* 505, 462: occasionally recorded in woodland at 2100 m.

## BUCEROTIDAE

**Black and White Casqued Hornbill** *Bycanistes subcylindricus* 513, 464: rarely observed, never above the bamboo at 2600 m.

**Crowned Hornbill** *Tockus alboterminatus* 515, 474: breeding resident.

**Ground Hornbill** *Bucorvus cafer* 528, 467: pairs 24 Feb 1990 and 29 Mar 1991 in forest clearings on the escarpment at 2700 m.

## CAPITONIDAE

**Yellow-spotted Barbet** *Buccanodon duchaillui* 529, 487: uncommon species of forest remnant above 2350 m.

**Double-toothed Barbet** *Lybius bidentatus* 534, 477: found in well wooded areas to 2250 m.

**Yellow-rumped Tinkerbird** *Pogoniulus bilineatus* 548, 495: common breeding resident easily observed between 2350 m and 2450 m in thickets on the escarpment roadsides.

**Moustached Green Tinkerbird** *Pogoniulus leucomystax* 551, 492: uncommon (possibly under recorded) between 2350 m and 2450 m.

**Red-fronted Tinkerbird** *Pogoniulus pusillus* 552, 493: occasionally at Turesia to 2200 m.

**Yellow-billed Barbet** *Trachylaemus purpuratus*\* 556, 496: under-recorded but observed in clearings above 2000 m.

## INDICATORIDAE

**Black-throated Honeyguide** *Indicator indicator* 563, 500: recorded on the Turesia plateau at 2100 m.

**Lesser Honeyguide** *Indicator minor* 566, 501: regularly observed to 2600 m.

## PICIDAE

**Red-throated Wryneck** *Jynx ruficollis* 575, 510: breeding resident of the Turesia plateau.

**Fine-banded Woodpecker** *Campethera tullbergi*\* 584, 515: observed in forest remnant above 2350 m.

**Cardinal Woodpecker** *Dendropicos fuscescens* 585, 519: common throughout the area to 2500 m.

**Bearded Woodpecker** *Thripias namaquus* 594, 520: regularly recorded in mixed woodland.

## HIRUNDINIDAE

**Red-rumped Swallow** *Hirundo daurica* 630, 556: regularly observed throughout the area.

**African Rock Martin** *Hirundo fuligula* 632, 560: breeding resident on the escarpment.

**Black Rough-wing** *Psalidoprocne pristoptera* 640, 564: common resident.

## ORIOLIDAE

**Black-headed Oriole** *Oriolus larvatus* 649, 568: common to 2300 m.

## PARIDAE

**White-bellied Tit** *Parus albiventris* 661, 583: relatively common breeding resident.

## TIMALIIDAE

**African Hill Babbler** *Alcippe abyssinica*\* 671, 594: only recorded in dense vegetation at forest edge, 2300 m.

**Mountain Illadopsis** *Trichastoma pyrrhopterum*\* 676, 591: recorded in dense undergrowth in forest remnant at 2700 m.

**Arrow-marked Babbler** *Turdoides jardineii* 681, 601: breeding resident of the Turesia plateau.

## CAMPEPHAGIDAE

**Purple-throated Cuckoo Shrike** *Campephaga quiscalina*\* 691, 606: uncommon in forest remnant at 2350 m.

**Grey Cuckoo Shrike** *Coracina caesia*\* 693, 607: common in forest remnant above 2350 m.

## PYCNONOTIDAE

**Mountain Greenbul** *Andropadus tephrolaemus*\* 704, 615: observed in the bamboo zone above 2600 m.

**Yellow-whiskered Greenbul** *Andropadus latirostris* 710, 618: common breeding resident.

**Placid Greenbul** *Phyllastrephus placidus*\* 727, 626: occasionally seen at 2400 m.

**Common Bulbul** *Pycnonotus barbatus* 732, 609: most common on Turesia plateau but recorded to 2750 m.

## TURDIDAE

**Robin Chat** *Cossypha caffra* 749, 670: common breeding resident (see p. 107).

**Little Rock Thrush** *Monticola rufocinerea* 768, 652: encountered in the open between 2000 m and 2500 m.

**Anteater Chat** *Myrmecocichla aethiops*\* 770, 653: occasionally recorded from Nyaru at 2750 m.

**White-starred Forest Robin** *Pogonocichla stellata*\* 782, 662: uncommon (or under-recorded) but in mixed bamboo/forest undergrowth above 2600 m.

**Northern Olive Thrush** *Turdus abyssinicus* 793, 678: breeding resident (see p. 107).

## SYLVIIDAE

**Grey Apalis** *Apalis cinerea* 817, 754: fairly common above 2350 m.

**Chestnut-throated Apalis** *Apalis porphyrolaema*\* 824, 756: observed between 2000 m and 2500 m.

**Black-collared Apalis** *Apalis pulchra*\* 825, 758: common breeding resident between 2100 m and 2450 m.

**Cinnamon Bracken Warbler** *Bradypterus cinnamomeus*\* 835, 684: recorded between 2350 m and 2450 m.

**Grey-backed Camaroptera** *Camaroptera brachyura* 837, 760: common breeding resident occasionally to 2350 m.

**Mountain Yellow Warbler** *Chloropeta similis*\* 844, 703: in bracken and open areas of bamboo between 2450 m and 2600 m.

**Hunter's Cisticola** *Cisticola hunteri*\* 861, 738: typically encountered in pairs duetting from dense cover above 2000 m.

**Grey-capped Warbler** *Eminia lepida*\* 875, 763: resident between 2300 m and 2450 m.

**Willow Warbler** *Phylloscopus trochilus* 908, 715: regular migrant during October.

**Brown Woodland Warbler** *Phylloscopus umbrovirens*\* 909, 712: in well forested or bamboo areas above 2300 m.

**Tawny-flanked Prinia** *Prinia subflava* 913, 743: present in secondary growth to 2100 m.

**Blackcap** *Sylvia atricapilla* 917, 708: passage migrant: south November, north February–April.

## MUSCICAPIDAE

**White-eyed Slaty Flycatcher** *Melaenornis chocolatina* 933, 790: breeding resident above 2000 m.

**Dusky Flycatcher** *Muscicapa adusta* 936, 782: common breeding resident.

**Spotted Flycatcher** *Muscicapa striata* 945, 780: migrant: south October–November, north March–April.

**Chin-spot Batis** *Batis molitor* 951, 799: common breeding resident to 2400 m.

**Paradise Flycatcher** *Terpsiphone viridis* 968, 812: occasionally observed to 2450 m in open woodland.

## MOTACILLIDAE

**African Pied Wagtail** *Motacilla aguimp* 991, 831: common to 2350 m.

**Mountain Wagtail** *Motacilla clara* 995, 833: occasionally recorded on the Kimwarer River to 2200 m.

**Yellow Wagtail** *Motacilla flava* 996, 830: passage migrant October–March.

## MALACONOTIDAE

**Northern Puffback** *Dryoscopus gambensis* 1000, 837: recorded to 2350 m.

**Tropical Boubou** *Laniarius ferrugineus* 1004, 849: breeding resident to 2400 m.

**Brown-headed Tchagra** *Tchagra australis* 1022, 840: common throughout the area, regularly to 2350 m.

## LANIIDAE

**Fiscal** *Lanius collaris* 1029, 864: common breeding resident.

## STURNIDAE

**Violet-backed Starling** *Cinnyricinclus leucogaster* 1048, 896: occasionally recorded to 2600 m.

**Sharpe's Starling** *Cinnyricinclus sharpii*\* 1049, 897: observed at 2600 m, 2 Feb 1992.

**Blue-eared Glossy Starling** *Lamprotornis chalybaeus* 1055, 879: common on Turesia plateau to 2200 m.

**Red-winged Starling** *Onychognathus morio* 1064, 885: resident along the escarpment.

**Slender-billed Chestnut-winged Starling** *Onychognathus tenuirostris* 1066, 886: recorded during the early rains, often associated with inaccessible waterfalls on the escarpment above 2450 m.

## NECTARINIIDAE

**Bronze Sunbird** *Nectarinia kilimensis* 1103, 925: breeding resident on the Turesia plateau around 2100 m.

**Olive Sunbird** *Nectarinia olivacea* 1112, 929: recorded in bamboo and forest above 2400 m.

**Northern Double-collared Sunbird** *Nectarinia preussi* 1115, 921: the most common sunbird in the area above 2250 m. Found in all habitats.

**Tacazze Sunbird** *Nectarinia tacazze*\* 1126, 924: a relatively common species.

**Variable Sunbird** *Nectarinia venusta* 1128, 910: breeding resident.

**Green-headed Sunbird** *Nectarinia verticalis* 1130, 934: breeding resident, observed to 2350 m.

## ZOSTEROPIDAE

**Yellow White-eye** *Zosterops senegalensis* 1133, 937: breeding resident.

## PLOCEIDAE

**Yellow Bishop** *Euplectes capensis* 1141, 978: usually encountered in the *shamba* area of Turesia Market.

**Baglafecht Weaver** *Ploceus baglafecht* 1159, 960: common breeding resident.

**Black-billed Weaver** *Ploceus melanogaster*\* 1174, 964: uncommon breeding resident of forest remnant above 2350 m.

**Grey-headed Sparrow** *Passer griseus* 1206, 990: common around Turesia Market.

**Rufous Sparrow** *Passer motitensis* 1207, 991: resident around human habitation in open woodland at Turesia Market.

## ESTRILDIDAE

**Abyssinian Crimson-wing** *Cryptospiza salvadorii*\* 1224, 1016: found in undergrowth and bamboo above 2600 m.

**Waxbill** *Estrilda astrild* 1226, 1029: occasionally encountered to 2350 m.

**Yellow-bellied Waxbill** *Estrilda melanotis* 1229, 1038: common between 2000 m and 2350 m.

**Black-crowned Waxbill** *Estrilda nonnula* 1230, 1036: a fairly common waxbill of secondary growth and forest edge to 2350 m.

**Crimson-rumped Waxbill** *Estrilda rhodopyga* 1233, 1031: only recorded at 2350 m on 27 and 29 Dec 1991.

**Grey-headed Negrofinch** *Nigrita canicapilla*\* 1246, 1005: locally common in forest remnant above 2350 m.

**Red-cheeked Cordon-bleu** *Uraeginthus bengalus* 1261, 1024: breeding resident on the Turesia plateau.

#### FRINGILLIDAE

**Golden-breasted Bunting** *Emberiza flaviventris* 1273, 1050: relatively common around Turesia.

**Thick-billed Seed-eater** *Serinus burtoni*\* 1281, 1063: observed between 2000 m and 2600 m.

**African Citril** *Serinus citrinelloides* 1283, 1054: observed at forest edge and in bamboo.

**Yellow-fronted Canary** *Serinus mozambicus* 1290, 1056: three observed at Turesia 2100 m, 29 Dec 1991.

**Streaky Seed-eater** *Serinus striolatus* 1292, 1064: common in secondary bush and forest edge.

## Discussion

### Analysis of records

A total of 338 species was recorded for the area between 1250 m and 2750 m: 25 were apparently montane endemic, 108 pluriregional, nine true intermediate and eight confined to low altitude, mainly visiting the area during very dry periods.

Table 1. General categorization of species

Wanderer to the area	21
Palaearctic migrant	41
Intra-African migrant	18
Showing seasonal movement	30
Occasional visitor	40
Non-breeding resident	28
Probable breeding resident	33
Confirmed breeding resident	127

## Extension of range

Many of the recorded species indicate some form of range extension or confirmation of old distribution records when compared with Lewis & Pomeroy (1989). The survey site is in the western half of their square 49D and records are as follows; numbers in parentheses after a species indicate the number of sightings (days).

### Renewal of former records — presence

**Wanderer:** Brimstone Canary (2).

**Palearctic migrant:** Garden Warbler (3), Lesser Grey Shrike (2).

**Intra-African migrant:** Plain Nightjar (1), Broad-billed Roller (5).

**Seasonal movement:** Olive Pigeon (1). Dusky Turtle Dove (numerous), Sharpe's Starling (1).

**Non-breeding resident:** Crested Guineafowl (4), Red-throated Wryneck (numerous), White-starred Forest Robin (numerous), Waxbill (numerous).

**Probable breeding resident (all numerous sightings):** Montane Nightjar, Mous-tached Green Tinkerbird, Yellow-billed Barbet, African Hill Babbler, Purple-throated Cuckoo Shrike, Mountain Greenbul, Anteater Chat.

### Renewal of former records — breeding (all numerous sightings)

Ring-necked Dove, Brown Parrot, Hartlaub's Turaco, White-fronted Bee-eater, Cinnamon-chested Bee-eater, Black Cuckoo Shrike, Dusky Flycatcher, White-eyed Slaty Flycatcher, Violet-backed Starling, Amethyst Sunbird, Yellow White-eye, Yellow Bishop, Chestnut-crowned Sparrow Weaver, Golden-breasted Bunting.

## Extension of range — presence

**Wanderer:** Nyanza Swift (2), Scarce Swift (1), Fawn-coloured Lark (1), Angola Swallow (2), Grey Tit (1), Mouse-coloured Penduline Tit (1), Red-fronted Warbler (numerous), Black and White Mannikin (1).

**Palearctic migrant:** Booted Eagle (1), Black-headed Gull (1), Eurasian Swift (numerous), Golden Oriole (3), Sprosser (1), Northern Wheatear (numerous), Whinchat (1), Sedge Warbler (1), Barred Warbler (1), Collared Flycatcher (1), Tree Pipit (numerous), Nubian Shrike (1).

**Intra-African migrant:** African Golden Oriole (3).

**Seasonal movement:** Yellow-billed Egret (1), Woolly-necked Stork (numerous), Cuckoo Hawk (1), Bronze-tailed Glossy Starling (8), Bristle-crowned Starling (2), Pygmy Sunbird (1), Cardinal Quelea (numerous), Black-cheeked Waxbill (1), Black-crowned Waxbill (numerous), Blue-capped Cordon-bleu (numerous).

**Occasional visitor:** Woodland Kingfisher (numerous), Yellow-spotted Barbet (2), Yellow-bellied Eremomela (2), Black Flycatcher (3), Gambaga Flycatcher (4).

**Non-breeding resident:** Brown Snake Eagle (4)\*, Little Sparrowhawk (numerous), Lichtenstein's Sandgrouse (3), Black Swift (numerous), Lesser Honeyguide (numerous), Mountain Illadopsis (numerous), Lesser Swamp Warbler (numerous), Grey Apalis (numerous), Cinnamon Bracken Warbler (numerous), Mountain Yellow Warbler (numerous), Grey-capped Warbler (numerous).

\*Recorded for 49D in unpublished supplement, Lewis (1989).

**Extension of range — probable breeding (all numerous sightings)**

**Pair in suitable habitat:** Hadada, Spectacled Weaver, Red-billed Firefinch, Indigobird.

**Building nest or nest site found:** Hamerkop, African Goshawk, Pygmy Kingfisher, Tawny-flanked Prinia, Rattling Cisticola.

**Singing and courtship display:** Emerald Cuckoo, Narina's Trogan, Red-capped Robin Chat, Brown-headed Tchagra, Variable Sunbird.

**Adults with juveniles:** Augur Buzzard, Double-toothed Barbet, Yellow-rumped Seed-eater.

**Adult sitting on nest but presence of eggs/chick unconfirmed:** Long-crested Eagle, Hunter's Sunbird.

**Extension of range — confirmed breeding (all numerous sightings)**

**Young in nest:** Speckled Pigeon, Red-eyed Dove, Laughing Dove, Little Swift, White-rumped Swift, Green Wood Hoopoe, Spotted-flanked Barbet, Striped Swallow, Wire-tailed Swallow, Red-faced Crombec, Grey Flycatcher, African Pied Wagtail, Northern Puffback, Grey-backed Fiscal, Rüppell's Long-tailed Glossy Starling, Collared Sunbird, Grosbeak Weaver, Red-headed Weaver, Black-headed Weaver, Golden-backed Weaver, White-headed Buffalo Weaver, Grey-headed Sparrow, Red-cheeked Cordon-bleu.

**Feeding young away from nest:** Harrier Hawk, Black Cuckoo (Tropical Boubou), African Cuckoo (Drongo), Red-fronted Tinkerbird, Red and Yellow Barbet, Nubian Woodpecker, White-bellied Tit, Arrow-marked Babbler, Brown Babbler, Rufous Chatterer, Yellow-whiskered Greenbul, Northern Brownbul, Robin Chat, Northern Olive Thrush, Yellow-breasted Apalis, Buff-bellied Warbler, Northern Crombec, Silverbird, Tropical Boubou, Grey-headed Bush Shrike, Olive Sunbird,

Beautiful Sunbird, Green-headed Sunbird, Baglafecht Weaver, Chestnut Weaver, African Firefinch, Red-billed Firefinch.

**Incubating eggs:** African Rock Martin, Spotted Morning Thrush, White-browed Robin Chat, Lead-coloured Flycatcher, Chestnut Sparrow.

**Taking food to nest:** Cardinal Woodpecker, African Penduline Tit, Grey-backed Camaroptera, Grey-headed Silver-bill.

**Recently fledged young:** Egyptian Goose, Crested Francolin, Helmeted Guineafowl, Blue-spotted Wood Dove, Tambourine Dove, White-bellied Go-Away Bird, Ross's Turaco, White-crested Turaco, Red-chested Cuckoo, White-browed Coucal, Little Bee-eater, Jackson's Hornbill, Yellow-rumped Tinkerbird, Black-throated Honeyguide, Grey Cuckoo Shrike, Black-collared Apalis, Black-throated Wattle-eye, Slate-coloured Boubou, Brubru, White-crowned Shrike, Northern Double-collared Sunbird, Little Weaver, Pin-tailed Whydah, Abyssinian Crimson-wing, Bronze Mannikin.

One hundred and eighty-three species, or more than 54 per cent of the total recorded for the area, were found to show some range extension or confirmation of former records. The relatively large number is attributed to the remoteness of the area and lack of former, continuous observer presence.

### Species interaction

#### **Nubian Woodpecker and Cardinal Woodpecker**

A Cardinal Woodpecker was seen to attack a Nubian Woodpecker which had opened a termite run within the branch of a *Tipuana tipu* tree (Wilson & Wilson 1992).

#### **Little Swift and African Rock Martin**

At the beginning of the early rains each year, African Rock Martins began collecting mud and building nests under the eaves of a house. Little Swifts would drive away the martins and take over the nest, topping it out with feathers, grass and saliva as usual. Any martins' nests more than about 15 cm from an overhead structure were ignored by the swifts.

#### **White-rumped Swift and Striped Swallow**

Striped Swallows were absent throughout the survey during October and November of each year; these months corresponding to the height of the late rains. Although the birds returned to their breeding sites each December, nest repairing and breeding rarely occurred until the start of the early rains, generally in March or April of the following year. Often, after successfully rearing a brood, unoccupied nests were taken over by

White-rumped Swifts which bred continuously until the end of the late rains.

The early arrival of the rains followed by their sudden cessation in March of 1993 (see Fig 3) delayed laying by the swallows and this resulted in fierce fighting over nest rights once the swifts had arrived at their usual time.

Several observations worthy of note were made during the study. Nests just completed by swallows were stolen by swifts with little confrontation. Nests which contained eggs were vigorously defended by the swallows with the combatants often locked together, tumbling on the ground. Usually the swallows kept the nest but on one occasion both swallow and swift eggs were incubated together by a pair of swifts which ejected the young swallows a few days after hatching. Swallows which were successful in keeping their nests early in the season usually succeeded in rearing broods throughout the rains.

### **Red-headed Weaver and Chestnut-crowned Sparrow Weaver**

While robbing a Red-headed Weaver's nest of material, a Chestnut-crowned Sparrow Weaver was attacked by the owner. A fight ensued with the Red-headed Weaver eventually being suspended in mid-air, wings closed, with its bill holding on to the tail feathers of the sparrow weaver, which, in turn, held on to the nest. After the encounter, the Red-headed Weaver abandoned the nest and the sparrow weaver showed no further interest in it.

### **Grey-headed Sparrow and Striped Swallow**

The nests of swallows were regular targets for an influx of Grey-headed Sparrows arriving annually shortly after the start of the early rains, usually in April or May. On one occasion during May 1992, two almost fledgling-aged Striped Swallows were dragged from their nest by a pair of sparrows and killed on the ground by bill stabbing. The tunnel entrance to the nest was enlarged by the sparrows but, after some relining, was eventually abandoned without successful breeding.

## **Habitat preferences of similar species**

### **Ross's Turaco, Hartlaub's Turaco and White-crested Turaco**

Altitude appeared to be the main factor in separating these species. Hartlaub's was found to be in highland forest along the escarpment above 2400 m. No turacos were observed on the Turesia plateau between 2100 m and 2300 m, probably due to extensive cultivation of the area. Ross's, observed between 1450 m and 2000 m, overlapped with the White-crested which was seen between 1300 m and 1600 m. Hartlaub's inhabited the wetter west, upland areas, Ross's the intermediate and White-crested the drier to semi-arid valley floor.

### **Arrow-marked Babbler and Brown Babbler**

These species overlapped in *Acacia* woodland at around 1400 m. The Arrow-marked,

preferring higher altitudes, was observed throughout the study in all areas with low bush. Rarely away from cover, they were common in secondary growth around *shambas* and in exotic plantations. In contrast, the Brown Babbler was observed in the drier east and regularly in the open although never far from cover.

### **Robin Chat and White-browed Robin Chat**

Both species were found to be breeding residents in well wooded areas with much low cover. The White-browed Robin Chat was never recorded on or above the Turesia plateau (2000 m) and only during the coldest months, coincident with the rains, was the Robin Chat recorded below the Turesia plateau. The lowest record for this species was at 1500 m. No interaction between the two species was observed.

### **Northern Olive Thrush and African Thrush**

Throughout the year the African Thrush was most common in the drier east of the region being observed up to around 1600 m. The Northern Olive preferred higher altitudes, being very common on the escarpment in areas of dense cover. Only during the cooler rains did the Northern Olive venture below 1700 m and even then was never seen below 1500 m. Where the two species overlapped, the ground appeared neutral and, since neither apparently nested between 1450 m and 1700 m, conflict never occurred with the birds appearing to totally ignore each other.

### **Grey Flycatcher and Pale Flycatcher**

Throughout the observed area these breeding residents appeared to be separated by altitude and climate. The Grey was seen to prefer the drier east below 1400 m while the Pale was observed in the wetter west generally above 1500 m. During certain periods very local movement was observed with the Pale often observed down to 1350 m where it was sympatric with the Grey during the rains. During the driest months the Grey in turn increased its altitude range, being seen regularly with the Pale up to 1600 m.

## **Breeding**

### **Breeding records**

Breeding seasons were compared with Brown & Britton (1980) and, although many were found to be in agreement, Table 2 lists those species for which there were no records available and those showing marked discrepancy or extended periods.

Table 2. *Breeding seasons of confirmed species*

### **Key**

Solid line: Brown & Britton (1980)

Grey shading: current study



Species/month	J	F	M	A	M	J	J	A	S	O	N	D
Chinspot Batis												
Northern Puffback			█									
Black-headed Gonolek				█								
Tropical Boubou					█							
Slate-coloured Boubou												
Grey-headed Bush Shrike												
Sulphur-breasted Bush Shrike								█				
Brubru												
White-crowned Shrike							█					
Violet-backed Starling				█								
Collared Sunbird												█
Amethyst Sunbird										█		
Olive Sunbird												
Green-headed Sunbird												
Yellow White-eye												
Grosbeak Weaver					█							
Red-headed Weaver												
Golden-backed Weaver										█		
Little Weaver							█			█		
Chestnut-crowned Sp Weaver				█						█		
Chestnut Sparrow			█									
Pin-tailed Whydah												
Red-billed Firefinch												
Bronze Mannikin			█					█				
Grey-headed Silverbill												

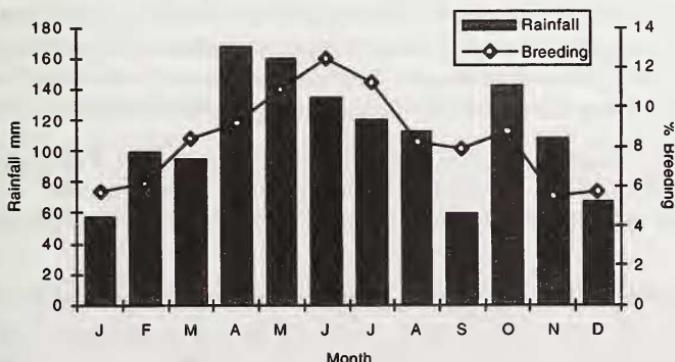


Figure 14. Mean of monthly rainfall and percentage of total species breeding

Figure 14 gives the percentage of the 127 confirmed breeding residents super-imposed upon a graph of the mean monthly rainfall for the survey period. From the figure it is apparent that breeding is triggered by the onset of the early rains peaking after the heaviest falls. A decline with diminishing precipitation can be seen as can a secondary smaller peak during the late rains. Although the June peak of only 4 per cent above a breeding mean of 8.3 per cent may appear small, 75 per cent of the total species were seen to breed during the rains.

### Notes on selected species

**Speckled Pigeon** Described by Brown & Britton (1980) as a breeding resident with a decline during the rains. Unfortunately this could not be assessed for birds breeding on the escarpment; but on the drier valley floor at 1350 m, where the species is a common breeding resident, a decline was noted during the dry season. This was thought due to radiant heat within the roof of the corrugated steel buildings where the pigeons nest. This increase in temperature, well above ambient during the dry season, was thought to be too great for the birds to endure. Conditions improved for breeding during the cooler rains.

**Black Cuckoo** This species was most prevalent throughout the early rains, a juvenile observed during the first 11 days of July 1990 being fed by its Tropical Boubou foster parent.

**African Cuckoo** Observed as a juvenile present throughout June 1992. The first sighting was on 11 June when the cuckoo was fed by both foster-parent Drongos. Later in the month the bird was seen hunting in the manner typical of a Drongo, perching conspicuously and darting out for food in flight or alighting to catch a prey on the ground, returning to the same favourite perch.

**Lead-coloured Flycatcher** On 12 March 1993 a pair was seen taking nesting material to a former Nubian Woodpecker nest hole 5.5 m above ground, in a telegraph pole at 1450 m above sea level. Incubation began on about 19 March leaving the west-facing nest hole unattended during the heat of the afternoon. It was at such a time that the opportunity was taken to record the nest and eggs (Wilson & Wilson 1994).

**African Pied Wagtail** In 1992 a pair built their nest at floor level on a walkway within the main plant adjacent to grinding mills, subjecting their two chicks (successfully reared from three eggs laid on 17 January) to continuous noise of over 100 dB.

**Grosbeak Weaver** Until October 1990 this species was unrecorded in the area. During early 1990 one of the lagoons was drained leaving a central area of fine, wet silt which provided ideal growing conditions for an expanse of dense *Typha*. During December 1990 the first weavers were noted in the *Typha* and by 1992 a colony of some 20 pairs was present. During 1993, a second, smaller lagoon was also drained with the same result, increasing the population of weavers by around 50 per cent.

### Miscellaneous observations on selected species

**Hoopoe** Hoopoes are never common although their numbers increase between September and April when the nominate race is present. Only during September and October are *Upupa e. eops* and *U. e. africana* sympatric, with the latter unrecorded between November and April annually.

**Lesser Honeyguide** On 9 February 1990 a Lesser Honeyguide being pursued by Common Bulbuls became impaled on a prickly pear cactus *Opuntia vulgaris*. Although impaled through the pectoralis major muscle, the bird was able to fly after being rescued.

**Striped Swallow** During May 1992 two pairs built a communal (single chamber) nest with two entrance tunnels. During April 1993 Striped Swallows built a nest using mud from different site areas leaving the dried construction showing the building pattern in the form of definite colourful concentric bands.

**African Penduline Tit and Mouse-coloured Penduline Tit** The African Penduline Tit was found to be a breeding resident within the area while the Mouse-coloured Penduline Tit was apparently a wanderer recorded only once. This is in contrast to observations, both personal and by Stevenson (1980) at nearby Baringo where the Mouse-coloured is the breeding resident and the African the visitor.

**Common Bulbul**, On 8 December 1989 a Common Bulbul was observed being particularly harassed by others of the same species. On closer examination the bird was seen to have a white base to the bill and prominent white eye-ring on both sides of the head (Wilson 1994). Apart from these obvious differences and a more skulking nature, the bird was as *P. barbatus*. Although similar to the southwest Asian race *xanthopygos*, the eye-ring was markedly wider, being estimated at 2 mm.

**Red-capped Robin Chat** This chat was only spasmodically recorded during 1989 and 1990 and only at around 1550 m in ravine woodland. During 1991 and 1992 it was recorded more often, being observed between 1350 m and 1650 m [FW] always in well wooded areas. In 1993, although the species was first observed in January, it was heard daily between March and June singing from the same area of woodland. An almost instant response was seen to tape playback when the true call was recorded whereas playback of its own mimicry had little or no effect. Unfortunately no nest site has been found, the species being categorized as 'probably breeding resident'.

**Northern Puffback and Jameson's Mamba *Dendroaspis jamesoni*** On 28 July 1992 a Jameson's Mamba was moving in a tree adjacent to a *Pappea capensis*, in which a female Northern Puffback was incubating eggs, when it came under attack from the male puffback. While the snake was preoccupied by other birds which surrounded it, the puffback alighted and, lifting the tip of the snake's tail in its bill, took off again. The bird rose a good 10 cm before the weight became too much for it, when the tail was dropped. This was repeated three times before the snake moved away.

**Lesser Grey Shrike** Generally regarded as a northerly passage migrant in Kenya (Britton 1980). Two were recorded on southerly passage 29 September and 19 October 1991, both remaining only until around midday when the weather cleared sufficiently for the birds to leave the valley.

**Nubian Shrike** Probably the tenth record for Kenya (D. A. Turner, pers. comm.) the shrike was recorded on 31 October 1992 as part of a fall with Eurasian Bee-eaters, Eurasian Rollers, Golden Orioles and Red-backed Shrikes. Believed to have been attracted to the mine lights during adverse weather.

**Bronze-tailed Glossy Starling** 1989 was a particularly wet year with 1524 mm of precipitation recorded at 1400 m. Many trees which generally have little fruit were seen to crop exceptionally heavily during January 1990, especially so *Pappea capensis* which attracted hundreds of feeding Blue-eared Glossy Starlings to the area. On eight days, around 50 of these starlings visiting one particular tree had, in association, five Bronze-tailed Glossy Starlings. The spectacle of so many starlings together and observation of the Bronze-tailed was not repeated during the survey period.

**Superb Starling** In May 1993 a pair of Superb Starlings completely lined their nest with fibre-glass insulation material.

**Amethyst Sunbird** These sunbirds were often observed stealing feathers for nest lining from the outer surface of Little Swifts' nests. The sunbirds' nests were in turn raided by Chestnut-crowned Sparrow Weavers.

**Red-billed Firefinch Indigobird** Although this species is an uncommon resident of lowland below 1350 m, seasonal influxes towards the end of the early rains coincide with the breeding of its known host, the Red-billed Firefinch. At this time an estimated (from males in breeding plumage with accompanying females) 40 pairs are usually present within an area of 8 km<sup>2</sup>.

### Changing habitat

Before the mining company constructed an all-weather road down the escarpment in 1971 and bridged the Mong River, direct access to the area was on foot. Over the past 20 years former subsistence farming has been over-shadowed by improved agriculture due to improved accessibility to the Turesia plateau and valley floor. During the survey period, this development continued to accelerate with an ever increasing influx of people to the area. Well tended *shambas* now surround the airstrip replacing former bush and woodland. This pressure is beginning to show throughout with over-grazing on the valley floor and seasonal burning on the hillsides resulting in increased erosion during the rains. However, bush clearing for charcoal burning or extension of farmland, which has caused major loss of soil on other parts of the valley floor (Kipkorir, Soper & Ssennyonga 1981), has not yet had such a drastic effect within the surveyed area. The agriculture of the Turesia plateau is, however, spreading both

towards the valley floor and up into the remaining fragmented forest. But, as the escarpment is approached, the danger from landslides becomes all too apparent: there have been several large falls already. A thin ribbon of forest-type vegetation should therefore remain because of the threat of rockfall; the gathering of firewood from within the area is still practised. A comprehensive irrigation scheme has been proposed for the valley floor, including the damming of the Kimwarer River above the escarpment. Should this happen, even greater pressure would be placed on the natural environment, not only from the land clearance necessary to make the venture economic, but also from the increased human population the water would support.

Evidence portraying the general change in habitat is best exemplified by the species observed throughout the period. Quelea and Cardinal Quelea, unrecorded early in the survey, were later relatively common in flocks visiting the recently developed *shamba* area around the airstrip, especially just prior to harvesting. These visitors brought with them their attendant predators with African Goshawk and Black-shouldered Kite often being seen. Streaky Seed-eater, initially unrecorded below the Turesia plateau, was later regularly observed to as low as 1600 m due, it is believed, to the increase in land cleared for *shambas* at this altitude.

Throughout the survey period the lagoons on the valley floor provided a varied habitat for numerous species. Lagoons were present in all stages of development from expanses of open water, attracting swifts and swallows hawking for insects, to filled and dry, overgrown with dense *Acacia* bush and trees. A partially filled lagoon had mud banks attracting waders and storks and one drained during the survey period was quickly overgrown with *Typha* providing an ideal nesting site, soon exploited by Grosbeak Weavers. At a further stage of development, one completely dried lagoon was covered with grass and *Acacia* scrub and small trees attracting Little Bee-eater, Pin-tailed Whydah, Grey-headed Silver-bill, and nesting Golden-backed Weavers. One overgrown lagoon, at the time of writing some ten years old, supported *Acacia* to five or more metres, providing habitat for various species including Yellow-breasted Apalis, doves, White-bellied Go-away Bird and Hoopoe. Dense undergrowth beneath the trees gave sanctuary to skulking species such as Northern Brownbul, Slate-coloured Boubou and Spotted Morning Thrush. The plant buildings provided nest sites for species otherwise unlikely to be found on the valley floor such as Speckled Pigeon, Little Swift, African Rock Martin and Wire-tailed Swallow.

Once the deposit becomes exhausted, the mine will close and much of the artificial habitat will be lost. The plant buildings will be demolished for their structural steel content and the lagoons will totally dry and revert to *Acacia* woodland. Since this will result in all tall buildings and large expanses of open water disappearing from the area, many of the observed species, both resident and migratory are expected to go unrecorded in the future.

## Addendum

### Species accounts

Species of interest observed since July 1993.

#### ACCIPITRIDAE

**Eurasian Marsh Harrier** *Circus aeruginosus* 92, 97: (B 6) single 11 Feb 94.

**Long-legged Buzzard** *Buteo rufinus* 123, 118: (D 2) three, with other birds of prey, 23 Oct 1994.

#### FALCONIDAE

**Lesser Kestrel** *Falco naumanni* 156, 160: (B 9) pair 7 Nov 1993.

**Hobby** *Falco subbuteo* 160, 152: (C 4) adult 1 Nov 1993.

#### PHASIANIDAE

**Hildebrandt's Francolin** *Francolinus hildebrandti* 171, 166: (D 1) single adult female 26 Oct 1994.

#### CAPRIMULGIDAE

**Freckled Nightjar** *Caprimulgus tristigma* 439, 403 (D 4): remains of an adult found 30 Jan 94.

#### CORVIDAE

**Pied Crow** *Corvus albus* 654, 577: (C 4) 7 May 1994.

#### SYLVIIDAE

**Marsh Warbler** *Acrocephalus palustris* 809, 693: (C 4) single 21 Nov 1993.

#### LANIIDAE

**Woodchat Shrike** *Lanius senator* 1038, 860: (B 9) immature, 25 Sep 1994.

#### ESTRILDIDAE

**Green-backed Twinspot** *Mandingoa nitidula* 1242, 1014: (C 4) single 20 Dec, pair 21 Dec 1993 and single 10 Aug 1994.

#### FRINGILLIDAE

**Yellow-fronted Canary** *Serinus mozambicus* 1290, 1056: believed resident on Turesia plateau.

### Changing habitat

Since the completion of the survey, Sector C 4 (Region A) has been altered significantly in that much of the *Dodonaea angustifolia* and *Teclea* has been destroyed in the making of a *shamba*, forcing such species as Narina's Trogan and Red-capped Robin Chat into more open, nearby garden areas. This is also probably the reason for the recent observation of Green-backed Twinspot.

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